Broad Agency Announcement

INfluence Campaign Awareness and Sensemaking (INCAS)

HR001121S0008

October 28, 2020

Amendment 1
November 3, 2020

Defense Advanced Research Projects Agency
Information Innovation Office
675 North Randolph Street
Arlington, VA 22203-2114

Summary of Amendment 1 Changes:

The purpose of this amendment is to publish the Controlled Unclassified Information Guide.

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PART I: OVERVIEW INFORMATION

- **Federal Agency Name:** Defense Advanced Research Projects Agency (DARPA), Information Innovation Office (I2O)

- **Funding Opportunity Title:** INfluence Campaign Awareness and Sensemaking (INCAS)

- **Announcement Type:** Initial Announcement

- **Funding Opportunity Number:** HR001121S0008

  Catalog of Federal Domestic Assistance Numbers (CFDA): Not Applicable

- **Dates**
  - Posting Date: October 27, 2020
  - Abstract Due Date: November 17, 2020, 12:00 noon (ET)
  - Proposal Due Date: January 8, 2021, 12:00 noon (ET)
  - Proposers Day: October 30, 2020

- **Additional BAA Process/Timelines**
  - Government Abstract Responses ~ November – December 2020
  - Proposals are reviewed for BAA Compliance ~ January 2021
  - Government conducts Scientific Review Process ~ January – March 2021
  - Government sends out notification letters ~ March 2021
  - Contracts negotiated & awarded ~ July 2021

- **Anticipated Individual Awards:** DARPA anticipates multiple awards for Technical Areas (TAs) 1 and 2 and a single award for TAs 3 and 4 (No award for TA5, which is listed for information purposes only)

- **Types of Instruments that May be Awarded:** Procurement contracts or Other Transactions

- **Agency Contacts**

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  - **I2O Solicitation Website:** https://www.darpa.mil/work-with-us/opportunities

PART II: FULL TEXT OF ANNOUNCEMENT

I. Funding Opportunity Description

DARPA is soliciting innovative research proposals in the area of computational techniques and tools that aid analysts in detection and sensemaking of geopolitical online influence campaigns. Proposed research should develop and demonstrate innovative approaches that enable revolutionary advances in capability. Specifically excluded is research that primarily results in evolutionary improvements to the existing state of practice.

This Broad Agency Announcement (BAA) is being issued, and any resultant selection will be made, using procedures under Federal Acquisition Regulation (FAR) 6.102(d)(2) and 35.016. Any negotiations and/or awards will use procedures under FAR 15.4. Proposals received as a result of this BAA shall be evaluated in accordance with evaluation criteria specified herein through a scientific review process.

DARPA posts BAAs on the System for Award Management, Contract Opportunities (Beta.Sam.Gov) website (https://beta.sam.gov/) and, when applicable, the Grants.gov website (https://www.grants.gov/). (Grants will not be awarded under this program.)

The following information is for those wishing to respond to this BAA.

A. Introduction and Background

The INfluence Campaign Awareness and Sensemaking (INCAS) program will develop techniques and tools that enable analysts to detect, characterize, and track geopolitical influence campaigns with quantified confidence. The US is engaged with its adversaries in an asymmetric, continual, war of weaponized influence narratives. Adversaries exploit misinformation and true information delivered via influence messaging: blogs, tweets, and other online multimedia content. Analysts require effective tools for continual sensemaking of the vast, noisy, adaptive information environment to identify adversary influence campaigns.

Today, geopolitical influence campaign detection and sensemaking is largely manual and ad hoc. Analysts use social listening tools to formulate complex keyword queries; track trending keywords, hashtags, and topics; and read hundreds to thousands of documents to identify influence themes. New or "low and slow" campaigns are hard to detect early as their message[1] volume may be beneath platform "trending" thresholds and pertinent hashtags may be unknown. With current tools, it is difficult to connect messages over time and across multiple platforms to track evolving campaigns and to assess confidence in analytic conclusions in a principled manner. Confidence assessment by analysts is ad hoc, manual, subjective, qualitative and susceptible to analyst cognitive biases (e.g., confirmation bias). Analyst reports often cover static time ranges, and static reports quickly become stale.

[1] For this document, "message" is used to refer to any kind of online media post (blog post, tweet, news article, etc.).

Today, with current tools, analysts must manually sift through a high volume of messages to find those with relevant influence agendas then gauge which ones are gaining traction and with whom. Analysts track population response using digital marketing tools for analyzing audience demographics, interests, and personality. These tools lack explanatory and predictive power for deeper issues of geopolitical influence. Audience analysis is often done using static, demographic segmentation based on online and survey data. This lacks the flexibility, resolution, and timeliness needed for dynamic geopolitical influence campaign detection and sensemaking.

B. Program Description and Scope

INCAS tools will enable analyst-guided influence campaign analysis using automated influence detection (TA1). In contrast to current social media tools, INCAS tools will directly and automatically detect implicit and explicit indicators[2] of geopolitical influence in multilingual online messaging to include author's agenda, concerns, and emotion.

To explain and anticipate population response to influence messaging, INCAS tools will dynamically segment the responding population and identify psychographic[3] attributes relevant to geopolitical influence (TA2). Psychographic attributes, such as worldviews, morals, and sacred values, are hypothesized to correlate more strongly with geopolitical influence response than the personality and demographic attributes used for marketing. A person's worldview is the way they see and understand the world, especially regarding issues such as politics, philosophy, and religion.[4] Worldviews can include systems of moral and sacred values.[5] Psychographic attributes will be extracted using analysis of text and online behavior, and attributes will be correlated with influence indicators in messaging to which the population segment is responsive.

INCAS tools will support analyst-guided linking of influence indicators and population response over time and across multiple platforms to capture dynamic, evolving campaign models (TA3). Campaign models will combine machine-surfaced influence indicators and messaging and population response with analyst-provided campaign elements, including campaign tactics, objectives, actors, and events. Quantified confidence assessment will enable analysts to mitigate cognitive biases through INCAS automation that curates, elicits, combines, and organizes confidence intervals, evidence, alternative hypotheses, and supporting information. Integrated support for quantified confidence assessment represents another advance to assist analysts in evaluating the validity of conclusions.

INCAS will primarily use publicly available data sources including multilingual, multi-platform social media, online news sources, and online reference data sources. The program will focus primarily on text data. INCAS will not intentionally process text from US persons. If we inadvertently collect US person data, that will be deleted. See Section VI.B.3 for further

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[2] An influence indicator is a span of text or a classification of that span of text in a message that signifies potential attempts to persuade the reader. An influence indicator may also be the emotion or sentiment associated with specific text.

[3] Psychographics describes the values, activities, interests, and opinions of populations or population segments. American Psychological Association, "Psychographics," https://dictionary.apa.org/psychographics

[4] https://www.collinsdictionary.com/us/dictionary/english/world-view

[5] e.g., J. Haidt, The righteous mind: Why good people are divided by politics and religion, Vintage, 2012. J. Ginges and S. Atran, "Sacred values and cultural conflict," *Advances in culture and psychology,* vol. 4, p. 273-301, 2013.

information.

INCAS is an applied research and development effort and is thus expected to result in portable, modular tools and technologies that operational users can assess. Towards this end, program performance will be rigorously evaluated on program-wide and technology-specific metrics for current and historical scenarios developed in consultation with operational stakeholders. Scenarios will be built around specific combinations of non-U.S. populations, topics of geopolitical interest, and online media platforms and sources.

Operational relevance and utility of tools must be demonstrated. To enable stakeholder tool evaluation and, ultimately, transition, INCAS will develop an extensible testbed for evaluation of tools in the INCAS toolkit. Tools for influence messaging detection, population characterization, and analyst sensemaking will be interoperable through a testbed infrastructure and can be deployed individually or in combinations.

While misinformation and disinformation do play a role in influence campaigns, approaches that are focused exclusively on misinformation or disinformation detection (e.g., "fake news") are not of interest, because influence campaigns can also build narratives around true events and facts. Proposals focused solely on social network analysis, knowledge graph construction, cyber-forensic analysis (bot and deep fake detection) are considered out of scope. However, responsive proposals may include the integration of existing technologies listed in this paragraph, as long as their inclusion is well-justified.

For INCAS, it is expected that researchers will leverage, refine, extend, or combine state-of-the-art natural language processing (NLP) technologies for purposes of geopolitical influence campaign detection and characterization, and proposals that are mainly about NLP research for general applications are of limited interest. Finally, INCAS will focus on awareness and sensemaking for analysts, and thus tools for mitigating, preempting, or responding to influence operations (e.g., planning or executing messaging campaigns) are considered out of scope.

Sources such as Princeton's Empirical Studies of Conflict Center document list nearly 100 foreign and domestic influence campaigns in the past 9 years.[6] As another illustrative example, consider the ability of adversaries to use influence campaigns to undermine support for the 800 overseas US bases and the significant strategic implications of these campaigns. A specific campaign might target bases in particular country aimed at a target audience of host nation citizens. Messaging to undermine these bases might initially be based on true events such as crime or pollution associated with some bases. These might then be distorted or exaggerated by an adversary: i.e., by impugning sinister motives to the US or the host nation government. Other wedge issues exploited by a campaign might include economic opportunity costs of bases or potential dangers from base activities (e.g., helicopter crashes). Much of the discourse about bases may be organic debates among concerned citizens. But some of the discourse may be pushed by an adversary with the agenda of undermining local support for bases or the US in general.

[6] This report uses only *open source* media reports and research articles. They identified 60 additional campaigns that only partially met their criteria. https://esoc.princeton.edu/publications/trends-online-influence-efforts

For illustrative purposes, the following is a notional workflow for a user of INCAS tools to address the analytic tasks and questions in Figure 1 for an influence campaign example, where an adversarial actor may be promoting narratives to undermine US bases in a country. Figure 1 depicts a notional workflow example, and proposers are encouraged to outline alternative approaches. INCAS tools should be able to support a variety of workflows with different interactions among the human analyst and INCAS automated capabilities. Figure 1 is meant to give proposers a sense of how INCAS components might work together with one another and with users and should not be construed as guidance or constraints for proposers. Proposers should, however, note that users are an essential part of the sensemaking process, and proposals should address how user interaction and feedback will be exploited.

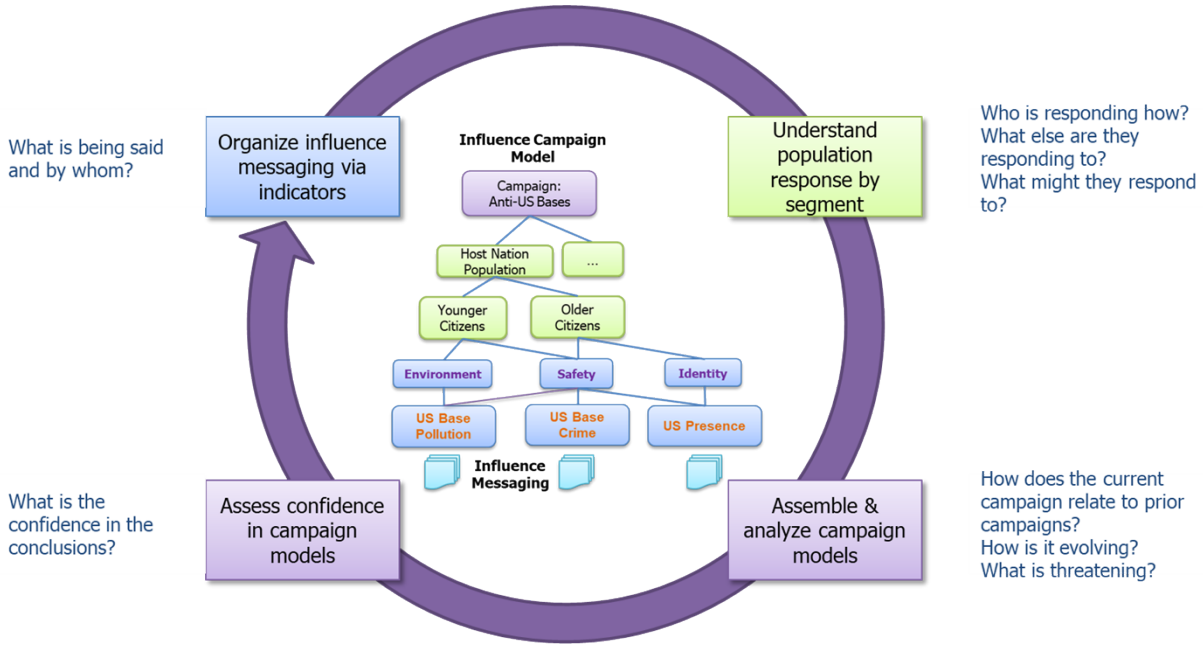

Figure 1. Notional Analysts Task Activities (outer ring) and Campaign Model Fragment (inside ring).

Within the notional workflow, a user starts by opening the INCAS Human-Machine Interface (HMI) (TA3) to begin characterizing a new campaign. The user specifies a non-US target population for the host nation of a US base and specific entities of interest (e.g., the bases involved) or topic of interest (e.g., pollution, crime). TA1 algorithms identify related influence messaging in relevant social media and other data feeds by detecting influence indicators (e.g. agenda, concerns, and emotion). For the anti-base example, agendas could include the downsizing, relocation, or removal of US bases. Identified concerns might include issues such as environmental pollution, crime, economic benefits (or costs), and security for the local population. Emotions might span the gamut from outrage associated with US bases to more positive emotions about the role these bases play in regional security. TA1 algorithms surface potentially relevant influence messaging to TA2.

TA2 algorithms then identify the population segments that are responding online. For example, TA2 algorithms might identify several host nation population segments responding to influence messaging about the bases. Using demographic and psychographic analysis of these messages and their metadata, several groups might be apparent. For example, one segment responding more favorably to US bases (via their messages and online actions) might be predominantly

older citizens concerned about national security and generally pro-US. Another segment might be predominantly younger citizens who are responding negatively to US bases in much higher volume and much more negative sentiment or emotions. Upon demographic and psychographic analysis, this segment is found to be pro-environment and anti-US. These segments are surfaced to the user (along with confidence assessment information) to help a user understand which influence messaging is gaining traction with whom in the target population.

Taking advantage of previous analyses of influence indicators, TA2 algorithms begin to correlate influence indicators with the demographic and psychographic attributes of responding populations. These correlations can be exploited to explain or anticipate population segment response and answer questions such as "What else are these population segments responding to?" and "What might they respond to in the future?". Using indicators and attributes surfaced by TA1 and TA2 algorithms along with their own hypotheses, users can populate models representing specific campaigns via the TA3 HMI. For example, a user may decide to link recent influence indicators and responding population segments to hypothesized influence campaign elements (e.g., campaign activities and their associated tactics and potential actors). Common influence indicators might be spotted across other anti-US base campaigns. TA3 analytics might begin to triage campaigns, ranking them by potential threat. As they flesh out campaign models building on machine-surfaced information, users can view confidence assessment scores for a campaign model, aggregated from confidence assessment information surfaced by the TA1-TA3 analytics.

In this notional workflow, newly hypothesized campaign elements from a user may trigger TA1 or TA2 to find additional relevant influence indicators and responding population segments. Behind the scenes, TA4 provisions social media feeds and other data to all components and provides efficient access to campaign model data. As new data comes into INCAS through TA4, TA1-TA3 capabilities may be invoked to update their output and prior campaign models.

C. Program Structure

INCAS has five technical areas (TAs) as shown in Figure 2.

- **TA1, Influence Indicator Detection**, will develop techniques to identify influence indicators in online messaging. Multiple awards are expected.
- **TA2, Population Response Characterization**, will develop techniques to segment the responding population to a set of influence messages, characterize each segment using psychographic and demographic attributes, and identify correlations among these attributes, influence indicators, and response. Multiple awards are expected.
- **TA3, Influence Campaign Modeling**, will develop techniques for analyst-machine sensemaking of influence campaigns including aiding analysts in assessing confidence in campaign models. A single award is expected.
- **TA4, Data and Testbed Development**, will develop the infrastructure to provide social media messaging and other data feeds from online sources to all TAs. TA4 will collect and persist social media and other online data and implement low-level data analytics. TA4 will also develop application programming interfaces (APIs) so performers in other TAs can access data and post the output of their algorithms in TA4's infrastructure. In addition TA4 will develop the testbed infrastructure for program use. A single award is expected.
- **TA5, Program Evaluation**, will design and conduct technology evaluations (including

metrics and scenario definition), develop ground truth evaluation data for program scenarios, manage a Program Subject Matter Experts (SMEs) group, coordinate with an Operational Stakeholders Group, and coordinate PI meeting events. A single award is expected here for a University Affiliated Research Center (UARC) or Federally Funded Research and Development Center (FFRDC). TA5 will *not* be competed as part of this BAA, but is included here for informational purposes as all TAs are expected to interact with and support TA5 for program evaluation.

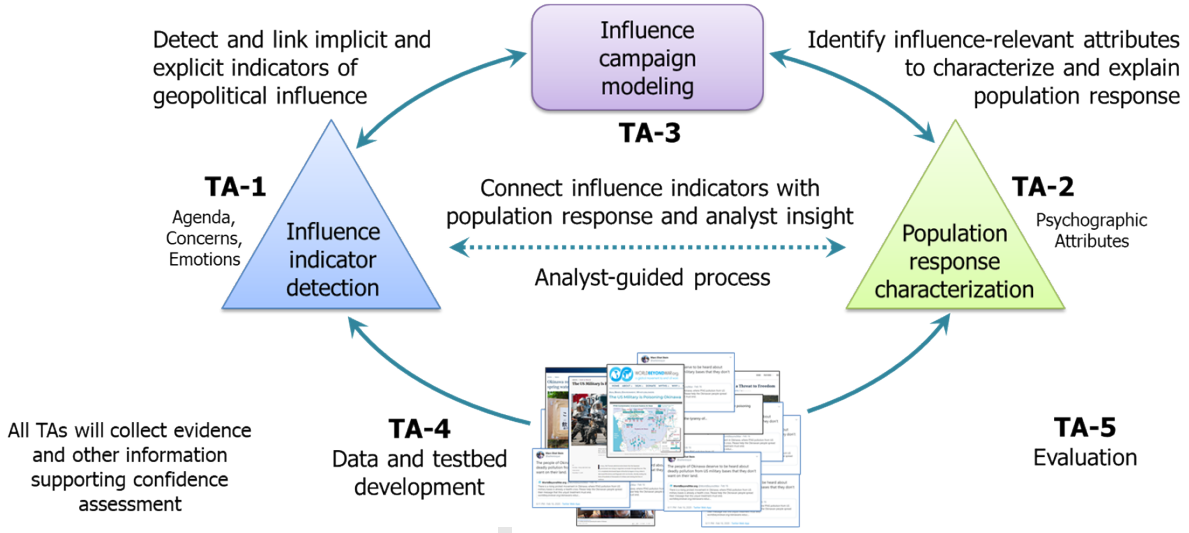

Figure 2. INCAS Technical Areas

INCAS is divided into three phases, totaling 48 months. The first two phases will be 18 months each, and the third phase will be 12 months.

- **Phase 1** (18 months) focuses on standing up initial capability for TA1 influence indicator detection, TA2 population segmentation and response analysis, and TA3 human-machine interfaces (HMI) paired with a data model for campaign modeling. A testbed infrastructure will be developed to include initial TA4 tools and services for data provisioning from multi-source data feeds and persistence of data for all TAs. This phase will exploit historical data for two related scenarios using English and an additional language to be determined by DARPA based on scenario selection. TA5 will work with all performers, DARPA, subject matter experts, and operational stakeholders to identify scenarios.

- **Phase 2** (18 months) focuses on standing up additional and improved capabilities for influence indicator detection; population segmentation and response analysis; and improvements to the HMI, the campaign data model, and campaign analytics. Additionally, INCAS tools will be hosted in a cloud-based testbed on the Secure Unclassified Network (SUNet) (or similar) to support operational partner tool evaluation. This phase will exploit contemporary data for two scenarios using English and an additional language for Phase 2.

- **Phase 3** (12 months) will focus on a capstone experiment with an operational partner, with a scenario, data, influence indicators, and psychographic attributes specifically tailored to the operational partner. This may include integration with extant operational partners' tools.

DARPA is not anticipating structured down selects across the phases of the program, although performers may be discontinued if the Government deems the research approach is unlikely to

yield adequate results.

D. Technical Areas

Figure 3 shows INCAS technical areas and a high level data flow among them.

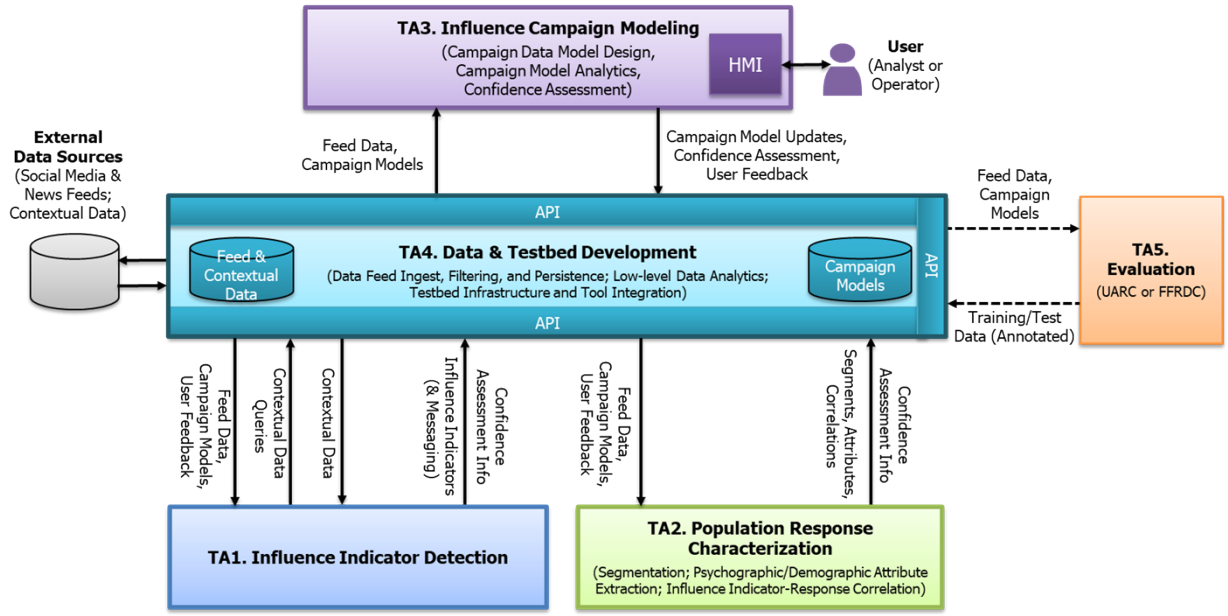

Figure 3. Data flow among INCAS technical area (TA) components

The arrows in Figure 3 show the functional data flow among INCAS TAs. External data feeds (social media, news) are ingested by TA4. TA4 will also persist campaign model data and data from social media feeds. Other TAs will access and store data in TA4 via its APIs. TA3 will provide the human machine interfaces (HMI) through which analysts will interact with INCAS tools.

Proposals may be submitted to all TAs, except TA5. Proposers interested in multiple TAs must submit separate proposals for each TA. Proposers addressing multiple TAs must describe expected research synergies and specific efficiencies and savings to the Government that would result if that proposer was selected for multiple TAs.

There are no inherent conflicts of interest between any of the competed TAs, and awards may be made to the same proposer under multiple TAs. If a proposer proposes to both TA4 and either TA1 or TA2, that proposer must address in the proposal how TA4, as the data provider and testbed developer, will ensure a "level playing field" to all other TA1 or TA2 performers.

Within a TA, teaming is encouraged but not required. Teams that can bring multidisciplinary insights and techniques to bear from computer science, artificial intelligence, social science, marketing, strategic communications, or other relevant disciplines are of particular interest.

There are multiple points of essential collaboration among TAs described in Section I.F, and DARPA expects all performers to collaborate effectively. Proposers should read the descriptions

of all TAs and the information about program expectations and timelines in the Program Structure section to ensure a full understanding of the program context, structure, and anticipated relationships required among performers. To facilitate the open exchange of information, all program performers will have Associate Contractor Agreement (ACA) language included in their award. See Section VIII for further information. All performers should be aware of Human Subjects Research (HSR) requirements (see Section IV.B).

TA1: Influence Indicator Detection

TA1 performers will focus on the detection of influence indicators in online messaging (social media, news, etc.). Performers will be required to address the following types of influence indicators: agenda, concerns, and emotion and to propose two additional types of influence indicator[7] in each of Phase 1 and Phase 2.

- Agenda is what the text/author is trying to get an audience to believe or do. For the anti-base example above, the agendas in the messaging might include that the US is harming ("poisoning") a host nation (via pollution) and that US bases should be removed. Agenda will help analysts identify influence messaging, understand its purpose, and determine its role in potential influence campaigns. Agendas may be explicit or implicit.
- Concerns are deeper, often wedge issues (e.g., environmental pollution) or underlying moral or sacred values (e.g., purity/sanctity) that the message speaks to. Adversaries aim at wedge issues to widen social seams. Moral and sacred values play a large role in human behavior.[8]
- Emotion and sentiment are expressed explicitly through emotional language or implicitly through tone. Emotion is frequently the major driver of peoples' response to messages. Strong emotion or sentiment in the text can also be an indicator of agenda and concerns as those tend to be "hot buttons".[9] Emotion here refers to that expressed by the author in the text.

While these examples are content-based indicators, other types of indicators may be possible that exploit metadata or other structural and temporal characteristics of messaging, or the messaging platform itself. Indicators must be meaningful to analysts to aid them in building models of campaigns.

For the base indicator types (agenda, concerns, and emotion) and additional indicator types, proposals must (1) define the indicator type and how it will be represented (e.g., text string, a canonical value from an ontology, etc.); (2) describe how it will be extracted from messaging or other data; (3) provide examples for the indicator type; (4) identify the theoretical or empirical basis for the relevance of the indicator type to geopolitical influence campaigns; and (5) describe

[7] An indicator type is a category such as "agenda" or "emotion". An indicator is a specific instance of an indicator type: e.g., the agenda that the US should remove its bases. For emotion, an indicator might be the presence of outrage or some other emotion.

[8] e.g., J. Haidt, The righteous mind: Why good people are divided by politics and religion, Vintage, 2012. J. Ginges and S. Atran, "Sacred values and cultural conflict," *Advances in culture and psychology,* vol. 4, p. 273-301, 2013.

[9] e.g., W. J. Brady, J. A. Wills, J. T. Jost, J. A. Tucker and J. J. V. Bavel, "Emotion shapes the diffusion of moralized content in social networks," *Proceedings of the National Academy of Sciences,* vol. 114, no. 28, pp. 7313-7318, 2017.

the expected utility and generalizability of the indicator type and the extraction approach across topics of discourse, cultures, languages, and social media over time. Proposers should identify at least two languages, in addition to English, that their approach could feasibly address.

Influence indicator detection and extraction for content-based indicator types is expected to exploit multiple extant and emerging natural language processing (NLP) techniques individually and in novel combinations. Proposals must describe the applicability of specific techniques to specific influence indicator types, the current state-of-the-art (including quantitative performance), expected research to extend and adapt these techniques for detecting indicators of geopolitical influence, and the basis for confidence in the approach. Proposals should describe how these techniques will be used in novel combinations; their scalability with regard to message length and high message volume; and their application to multilingual and multicultural data.

Proposals that include supervised learning approaches must describe the required type and volume of training data (e.g., labeled corpora in multiple languages) and its availability. Proposals are expected to identify and provision quality training data for their algorithms to supplement the scenario-specific training data provided by TA4.

Texts in social media may be fragmentary, making influence indicator detection difficult. Additionally, influence indicators may be implicit, which may necessitate the need to augment messaging with contextual text and other information: e.g., surrounding messages in a conversation, prior messaging by the same author, or vetted news stories on the same topic. Proposals must address how they expect to effectively and efficiently identify, access, and exploit such contextual information (or obviate the need for it) and identify specific publicly available sources where possible.

TA1 algorithms must be able to exploit campaign model elements (e.g., entities of interest) and user feedback from TA3 (provided via TA4) as context for indicator detection. Feedback includes, but is not limited, to user correction of extracted indicators and identification and labeling of missed indicators in influence messaging. Early in Phase 1, TA1 will work with TA3 on specifying the kinds of feedback to be captured from analysts and the format of how this feedback will be provided to TA1.

TA1 algorithms are expected to provide confidence assessment information along with indicator output. Such information may include confidence intervals, alternative ranked hypotheses, and supporting evidence. Proposals must describe what information they intend to produce and its format, reliability, and expected utility in support of campaign model confidence assessment (TA3).

In Phase 1, performers will address the core indicator types of agenda, concerns, and emotion and two additional indicator types. They will also address the challenge of fragmentary texts. In Phase 2, performers will refine Phase 1 indicator detection algorithms to improve accuracy and add two other indicator types. In Phase 3, performers will refine all indicator types to improve accuracy and generalizability. Phase 1 will focus on English and a second language. Phase 2 will add an additional language. The scenarios and languages for each phase will be identified by DARPA at each phase kickoff. See Section I.E for schedule details.

TA1 proposals must identify how they will achieve the TA1 program metrics listed in Section I.F

(Table 1). TA1 program metrics include accuracy of detection of influence messages, and, given such a message, accuracy of extraction of influence indicator detection. TA1 performers must propose additional technical metrics appropriate to their algorithms that will be used to demonstrate regular technical progress at a more detailed level.

TA1 performers are expected to work closely with performers in the other TAs, as described above and in Section I.F. Required TA1 deliverables are listed in Section I.F.

TA2: Population Response Characterization

Technology developed under TA2 will (1) segment the responding population at sufficient granularity based on response to influence messaging (e.g., responder sentiment or emotion[10], actions, volume); (2) extract demographic and psychographic attributes and behavioral patterns from online data; and (3) correlate influence indicators with population attributes to explain and anticipate a population segment's response to influence messaging. TA2 proposals must include technical approaches to meet these three objectives.

Proposers must extract two (2) demographic and two (2) psychographic attributes in Phase 1. In Phase 2 they must extract two (2) additional demographic and two (2) additional psychographic attributes. TA2 technology will ingest content, metadata and labeled influence indicators for influence messaging detected by TA1 technology and provided via TA4's APIs. Behavioral data may include type and volume of actions (likes, shares, etc.). TA2 can use additional publicly available data to aid in characterizing (sub)populations. Technical approaches for population segmentation must be data driven. TA4 will provide data relevant to the target population that TA2 can use for segmentation and psychographic attribute extraction. Proposals must identify required data, expected granularity, and the scalability of their segmentation approach.

Over the past 10 years, growth in users' online messaging has enabled audience demographic and psychographic attributes to be computed more easily for marketing purposes. Attributes include personality, interests, values, attitudes, etc. INCAS will go beyond the commercial focus on demographics and personality by developing new methods to extract psychographic attributes of population segments that are relevant to geopolitical influence campaigns, such as worldviews. Examples of worldviews might include whether someone (or some group) is globalist or nationalist, individualist or conformist, or has a hierarchical or egalitarian perspective.[11] For example, hierarchical and individualist groups may be more likely to view immigration as a risk and hence more receptive to influence campaigns that use immigration concerns to sway an audience (e.g., Brexit). Worldviews also include moral and sacred values, which have begun to be addressed in the research literature.[12]

TA2 proposals must identify two demographic attributes and two psychographic attributes each for Phase 1 and Phase 2. For each attribute, proposals should describe its (1) relevance to geopolitical influence campaigns; (2) theoretical support from scientific/marketing literature; (3)

[10] Emotion here is expressed by an individual in response to messaging. TA1 focuses on characterizing emotion expressed by the author of influence messaging.
[11] e.g., C. Graves and J. Puleston, "The Real Why and the Hidden Who," in *ESOMAR*, 2018.
[12] e.g., K. Kalimeri, M. G. Beiró, M. Delfino, R. Raleigh and C. Cattuto, "Predicting demographics, moral foundations, and human values from digital behaviours," *Computers in human behavior,* vol. 92, pp. 428-445, 2019.

expected utility; (4) generality across different populations, cultures, languages and over time; and (5) approach and feasibility of extraction from publicly available online data. Proposers should identify at least two languages, in addition to English, that their approach could feasibly address. If approaches require labeled training data, the proposal must make clear whether that data is already available. If the data is not already available, proposals must describe the resources required to obtain it, and the impact on timeline. For approaches using survey data to develop training data, proposals must also describe how potential sampling, self-report, and other cognitive biases will be mitigated.

As an example of an alternative approach to explicit and direct extraction of psychographic attributes, online activity data could be used to discover patterns that are directly predictive of behavior. This approach is now being used in e-commerce by product recommender systems, though such predictive patterns are harder for analysts to interpret. Proposals which include such techniques must address how to make output more interpretable by analysts.

TA2 technology must correlate a growing collection of influence indicators with population responses. For example, influence messaging that mentions immigration (a concern) might correlate positively or negatively with response by a subpopulation with a more globalist worldview. Proposals must include specific techniques to determine such correlations and update them over time as needed.

TA2 algorithms must be able to use campaign model elements (e.g., entities of interest) and user feedback from TA3 (provided via TA4) as context for segmentation and attribute extraction. This feedback includes, but is not limited to, user correction of segmentation and attributes and identification and labeling of missed attributes for population segments. Early in Phase 1, TA2 will work with TA3 on specifying the kinds of feedback to be captured from analysts and the format of how this feedback will be provided to TA2.

TA2 algorithms are expected to provide confidence assessment information along with population segmentation, attributes, and correlations. This confidence information might include, but is not limited to, confidence intervals, alternative ranked hypotheses, and supporting evidence. Proposals must describe what information they intend to produce and its format, reliability, and expected utility in support of campaign model confidence assessment (TA3).

In Phase 1, performers will extract two demographic and two psychographic attributes, and will focus on English and one additional language. Initial population response segmentation capabilities will be developed in Phase 1 as well. In Phase 2, performers will refine Phase 1 attributes extraction algorithms to improve accuracy and add two additional demographic and two additional psychographic attributes. Phase 2 will also focus on refining population segmentation capabilities developed in Phase 1, correlating population response with influence indicators, and introducing another language. In Phase 3, performers will refine all attributes to improve accuracy for the operational scenario. The scenarios and languages for each phase will be identified by DARPA at each phase kickoff. See Section I.E for schedule details.

TA2 proposals must identify how they will achieve the TA2 program metrics listed in Section I.F (Table 1). TA2 program metrics include the extraction accuracy for the demographic and psychographic attributes, and the accuracy of the correlations among influence indicators and population segment attributes. TA2 performers must propose additional technical metrics

appropriate to their algorithms that will demonstrate regular technical progress at a more detailed level.

TA2 performers are expected to work closely with performers in the other TAs, as described above and in Section I.F. Required TA2 deliverables are listed in Section I.F.

TA3: Influence Campaign Modeling

A single TA3 performer will develop analyst-guided influence campaign modeling tools that accelerate analysts' ability to detect and link influence indicators and messaging with population response over time. Section I.B presents an illustrative example of one potential analytic workflow that can be used to help analysts answer questions such as those shown in Figure 1. TA3 proposals must specifically address how analysts will work collaboratively with one another and with automated capabilities to build and understand campaign models.

TA3 has four major tasks: (1) design a campaign data model; (2) provide rich human machine interfaces (HMI) for analysts and operators; (3) provide analytics to populate, analyze, and compare campaign models; and (4) provide techniques (and HMI) that aid users in confidence assessment of a campaign model.

The campaign data model is envisioned as a data schema and associated taxonomies or ontologies that can be used to represent campaign elements including, but not limited to, influence indicators; population segments characterized by demographic and psychographic attributes; actors orchestrating a campaign and their objectives; target populations; tactics; and events. The data model must also support metadata capturing, data pedigree, data provenance, multiple hypotheses, supporting evidence, and other confidence assessment information from TA1 and TA2. Analysts and TA1-TA3 analytics will jointly populate campaign models: e.g., the notional workflow in Section 1.B. TA4 is responsible for implementing the campaign model and thus will work closely with TA3 on its design.

TA3 will develop a scalable, web-based HMI that helps visualize, explore, edit, search, and compare campaign models, represented using the campaign data model. The HMI must support drilldown to underlying social media and other data, and provide mechanisms for more free-form exploration of this data. The HMI must also capture feedback from analysts on output of TA1-TA3 analytics. The HMI will access data persisted by TA4 through TA4's APIs. The HMI must support multiple concurrent users and user-tailored views.

The TA3 performer will work closely with subject matter experts (SMEs) and operational users to iteratively refine the HMI. TA5 will coordinate access to some SMEs and operational users, though proposers may wish to supplement this with SME participation on their teams. Proposals must address how TA3 plans to work with these users to collect and incorporate their feedback. Thus TA3 performers must include some essential technical personnel cleared at least to the Secret level. Proposers should identify cleared personnel in their proposals.

TA3 will provide supporting analytics to aid users in deriving insight across one or more campaign models. For example, these might include campaign model clustering and triage by estimated threat or other criteria. Additional analytics could help filter out benign influence messaging such as product advertising. TA3 proposals must describe innovative analytics that

will support analysts, and how these analytics will specifically aid in campaign understanding, how they will be validated using ground truth data; and how they will scale to large campaign models and a growing collection of campaign models.

TA3 will prototype integrated validation tools for analysts to assess confidence in campaign models in consistent, principled ways. TA3 will analyze, aggregate, and surface information to analysts to enable them to make more principled confidence assessment of evolving campaign models. Minimally, TA3 could exploit and present available confidence intervals, multiple sources for validation, and scores associated with alternative hypotheses from TA1 and TA2 analytics. Beyond these notional examples, proposals must describe innovative approaches to capturing, eliciting, aggregating, and presenting confidence assessment information and make clear any expectations for information provided by TA1 and TA2. Confidence assessment inputs and outputs will need to be persisted (by TA4) via the campaign data model.

In Phase 1, the TA3 performer will develop the initial HMI capabilities and supporting analytics for the campaign data model and confidence assessment design. The TA3 performer is expected to deliver a description of the campaign data model at the Preliminary and Critical Design Reviews (see Section I.E) and complete its initial design by the first Principal Investigator (PI) meeting (6 months after kickoff). The campaign data model will be refined roughly quarterly as needed. In Phase 2, performers will refine the HMI and analytics based on user feedback and implement confidence assessment mechanisms. In Phase 3, the performer will continue to refine the HMI and confidence assessment methodologies in the context of the planned operational scenario. See Section I.E for schedule details.

TA3 proposals must identify how they will achieve the program metrics (see Table 1 in Section I.F for details). TA3 proposals must list additional technical metrics appropriate to their algorithms that will be used to demonstrate regular technical progress at a more detailed level.

TA3 performers are expected to work closely with performers in the other TAs, as described above and in Section I.F. Required TA3 deliverables are listed in Section I.F.

TA4: Data Provisioning and Testbed Development

TA4 will provision data for development and evaluation and develop a testbed infrastructure that enables TA1-TA3 tools to be easily assimilated by operational users.

TA4 is responsible for ingest, storage, and provisioning of data from multimedia, multilingual, multi-platform feeds (social media messaging, news stories, etc.) for other TAs for the INCAS evaluation scenarios. TA4 will also persist and provide access to data from TA1-TA3, to include influence indicators, population response characterization, and campaign model elements/feedback provided by TA3 via analysts or analytics.

In addition to ingesting and storing data, TA4 will be responsible for data enrichment to include metadata analysis; incorporation of cyber forensic indicators such as bot detection (from extant detector algorithms); and potentially other enrichments to be determined. All these enrichments should leverage primarily extant tools (open source or Commercial Off The Shelf (COTS)/Government Off The Shelf (GOTS)).

Although text media is the focus, in Phases 2 and 3 INCAS will investigate static images such as memes and ads and convert these to textual representations leveraging image recognition, meme libraries, optical character recognition (OCR) via extant open source or COTS/GOTS tools. Image analysis for video is considered to be out of scope.

TA4 proposals must describe this data ingest and analytic pipeline in detail and how well it will scale to higher data volumes and velocities. TA4 proposals must describe techniques for ingest of batch data for historical and current scenarios in Phase 1 and streaming data in Phase 2. As new data comes into the system through TA4, TA1-TA3 capabilities may be invoked via various workflows to update output and prior campaign models based on this new data. TA4 proposals should describe candidate workflows.

Proposals must describe how TA4 will work closely with all other TA performers to design APIs for data storage/access and identify common, low-level analytics (e.g., named entity recognition, etc.) and with TA3 to design the campaign data model. TA4 must also work with other TA performers to identify data relevant to INCAS evaluation scenarios and ingest those sources. TA1 and TA2 performers are expected to provide their own training data for supervised learning algorithms apart from that provided for the INCAS scenarios by TA5.

A key challenge for TA4 is to address the scalability of mining and processing high volume, high velocity social media and other data feeds. TA4 proposals must address techniques for filtering data feeds to the most relevant data for downstream analysis such as messaging involving members of the target population of interest. TA4 should assume that most messages are *not* geotagged.

The data provisioning approach must be flexible in order to meet the demands of changing information requirements from analysts in TA3 algorithm development in TA1 and TA2 (see Figure 3) and multiple INCAS evaluation scenarios. TA4 is expected to procure access to publicly available data sources that support the INCAS evaluation scenarios. This includes social media platforms including, but not limited to, YouTube, Twitter, and regional feeds and sources.

TA4 proposals must describe two realistic influence campaign examples and use the examples to motivate the technical approach. Examples may be derived from real world influence campaigns or hypothetical extrapolations of real world events. The descriptions must include estimates of the amount of data required and the likely data sources. Data collection strategies for each data source must be explained. The purpose of these descriptions is to demonstrate the ability of the TA4 team to think through the variable data collection requirements in light of the structure of the program and its goals. The descriptions do not need to be a complete picture of an engineered data pipeline, but must include enough information to provide a coherent rationale.

TA4 proposals should use these influence campaigns to estimate cost for data requirements. For scoping purposes, these should be on the scale of detecting a campaign directed against a specific target *non-U.S.* population on a set of related issues (e.g., a campaign targeted at a host nation to promote anti-base sentiment with the goal of reducing or eliminating US bases). Multilingual text data collection must be addressed.

TA4 is expected to maintain appropriate controls with respect to collection of data on US persons, privacy, personally identifiable information (PII), etc. Proposers must detail how they

plan to implement these controls, with specific attention to identifying and removing PII when necessary. TA4 performers will be responsible for providing relevant data policies and privacy training to all performers. Please see Section VI.B.3 for more information.

TA4 is expected to develop a cloud-based testbed infrastructure that will host INCAS tools and components from TA1, TA2, and TA3 and TA4 services for data ingest and persistence. This must support access by INCAS performers, government, and other stakeholders. TA4 is responsible for integrating algorithms and tools into this infrastructure, working with performers on other TAs. The infrastructure must support flexible workflows, handle dynamic updates from data feeds, instrumentation for performance analysis, and security. TA4 proposals must describe the proposed testbed architecture.

Initially, TA4 will host this testbed using its own infrastructure or a government cloud. In Phase 1, TA1-TA3 performers will primarily host their own algorithmic capabilities, and the TA4 testbed will host only TA4 capabilities (e.g., data ingest, persistence, and low-level data analytics). TA4 will host scenario data and the output of TA1-TA3. In Phases 2-3, the TA4 performer will support integration of TA1-TA3 capabilities into the testbed via containers and related technologies. TA4 may also support insertion of operational stakeholder tools into the testbed.

In Phase 2, it is expected that a demonstration and experimentation testbed for access by operational stakeholders will be stood up on an unclassified network such as the government's Secure Unclassified Network (SUNet) or similar. TA4 will be responsible for supporting the development testbed and demonstration/experimentation testbeds.

In Phase 3, TA4 is expected to support the transition of tools to an operational partner's environment for hands-on experimentation. TA4 will be responsible for integrating INCAS tools into that environment or partner tools into INCAS demo and experimentation testbed. TA4 must have personnel cleared at least to the Secret level. Proposers should identify cleared personnel in their proposals.

The TA4 performer is expected to work closely with performers in the other TAs, as described above and in Section I.F. TA4 will work closely with TA5 to support program evaluation. A stable prototype tool set must be in place prior to each program evaluation event. TA4 will be responsible for supplying compute and data storage resources for the evaluations at the mid-point and end of each program phase.

TA4 proposals must address the methodology and tools it will use to coordinate across distributed TA1-TA5 team members on design and support for the testbed and data provisioning. TA4 proposals must address agile and related methodologies for iterative design, development, and deployment of testbed and data provisioning capabilities. TA4 will also support quarterly toolkit demonstrations to operational stakeholders. See Section I.E for schedule details. Required TA4 deliverables are listed in Section I.F.

TA5: Program Evaluation

TA5 is *not* being competed via this proposal as it is expected that a FFRDC or UARC will fulfill this role. This information is included in this BAA as TAs are expected to support TA5 in

program evaluation. Proposed program metrics are shown in Table 1 in Section I.F. TA5 may develop additional metrics and TA1-TA3 performers are expected to develop their own metrics to assess regular progress.

TA5 is responsible for design, execution, and analysis of program evaluation experiments. This includes evaluation scenarios and data source identification. TA5 work will begin well in advance of the other TAs, so that initial data and sample coded ground truth data (along with the coding guidelines) will be available to the rest of the TAs at program kickoff.

In addition, TA5 will organize and manage a Program SMEs Group to include interdisciplinary SMEs from social science, marketing, and the operational community. These SMEs will be made available as a team resource and also support scenario and concept of operations (CONOPS) development, ground truth data development, HMI design, and tool evaluation.

TA5 will help organize and coordinate interactions with an Operational Stakeholders Group that will provide input on proposed tool capabilities, evaluation scenarios, and CONOPS. TA5 will coordinate quarterly meetings of this group.

The TA5 contractor will be responsible for organizing and hosting PI meetings every six months, and working closely with the DARPA Program Manager (PM) team.

E. Schedule and Milestones

Figure 4 shows the program schedule for the three phases, introduced in Section I.C.

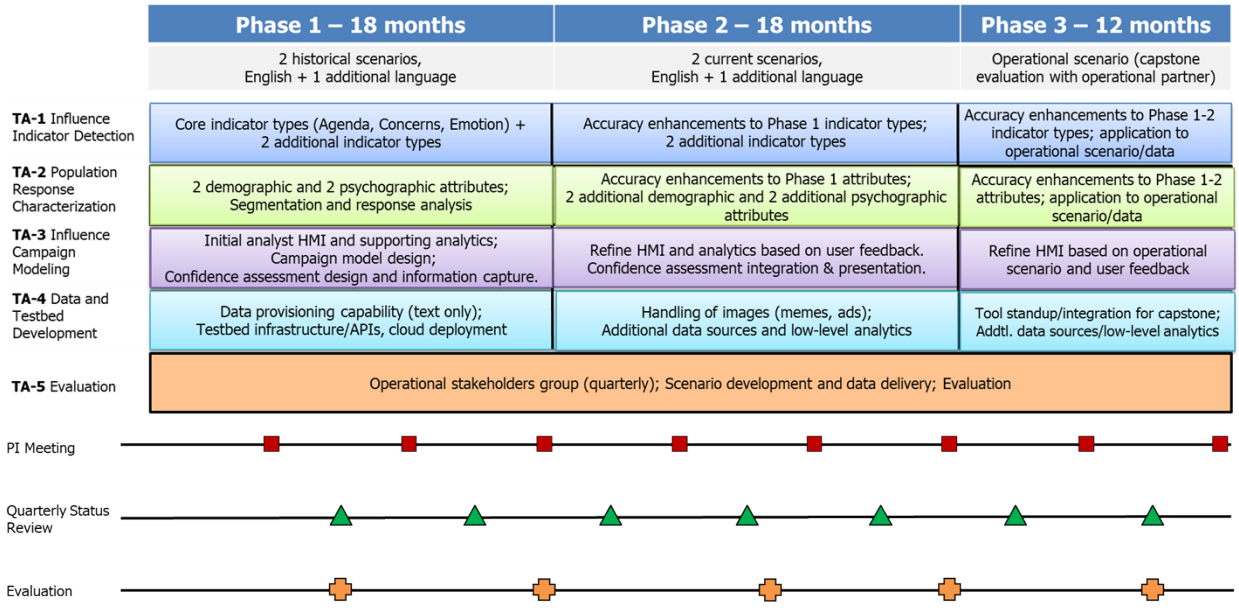

Figure 4. INCAS Program Schedule

Each phase has several regularly occurring events that all performers are expected to participate in:

- Two evaluation events will be held in the 9th and 16th months for both Phase 1 and Phase 2. Phase 3 will feature a single, capstone evaluation 3 months prior to the end of that

phase. Evaluations will last up to 1 week. These will involve significant coordination across performer teams.

- PI meetings and concurrent capability demonstrations will be held every six months. For planning purposes, these meetings will be in the Washington, DC metropolitan area and last 2-3 business days. However, DARPA has the option of holding these meetings virtually, if required, due to on-going or emergent circumstances.
- Status reviews will be held every three months. Every other review will be in conjunction with a PI meeting. One review per year will be held in conjunction with a site visit by the DARPA PM team to the site of each team's prime contractor. Remaining reviews will be held virtually via teleconference or videoconference (e.g., Zoom.gov, Microsoft Teams, etc.).
- Short informal monthly status meetings will be held with each performer team via teleconference or videoconference.

Additional Phase 1 events not shown include a Program Kickoff at approximately one month after program start, a Preliminary Design Review for all TA1-TA4 performers to be held six weeks after program kickoff and a Critical Design Review (CDR) to be held at three months after kickoff, in conjunction with the first Quarterly Status Review.

The final phase may require travel to operational partner sites by the TA3/TA4 team. For costing purposes, assume Tampa, Florida and quarterly 3-day trips.

F. Deliverables and TA Performer Interactions

Program metrics are summarized in Table 1.

Table 1. Summary of INCAS Program Metrics[13]

TAs	T&E Objective	Metrics	Phase 1 Objectives (18 months)	Phase 2 Objectives (18 months)	Phase 3 Objectives (12 months)
Data and testbed development (TA-4)	Does the program have the data and testbed for tool development and evaluation?	Scenarios	2 Historical (e.g. SocialSim Syria scenario)	2 Ongoing (e.g., China's Belt and Road Initiative)	Operationally-Relevant Scenario (with Op. Partner)
		Media	News & Social Media, English + 1 Non-English	1 Additional Non-English Language	Operationally-Relevant Data (with Op. Partner)
Influence indicator detection (TA-1)	Are messages which contain influence indicators being identified correctly?	Classification accuracy	F-score > 0.8	F-score > 0.9	F-score* >0.9
	For those messages, are influence indicators being extracted correctly?	Indicator extraction accuracy (Agenda, Concerns, Emotions)	+ 2 additional influence indicator types Average F-score > 0.7	+ 2 additional influence indicator types Average F-score > 0.8	Average F-score* > 0.8
Population response characterization (TA-2)	Are the attributes of the population segment accurate?	Attribute extraction accuracy	2 demographic attributes All F-score > 0.85	+2 demographic attributes All F-score > 0.9	Demographic attributes All F-score*> 0.9
			2 psychographic attributes Average F-score > 0.7	+2 psychographic attributes Average F-score > 0.75	Average F-score* > 0.8
	Are the correlations among influence indicators and pop. segment attributes accurate?	Accuracy of estimated influence indicators and pop. segment attributes from out-of-sample data	Accuracy > 0.7	Accuracy > 0.8	Accuracy* > 0.8
Influence campaign modeling (TA-3)	Are the influence indicators and population segment attributes useful for sensemaking?	Effects size of INCAS tools on sensemaking measures	Cohen's d** >= 0.5 (medium effect size) on 2 or more measures	Cohen's d >= 0.8 (large effect size) on 3 or more measures	Cohen's d >= 0.8 (large effect size) on all measures*
	Usability of INCAS tools	Usability (scale 0-1)	0.7	0.8	0.8*

[13] *During operational testing, in Phase 3, metrics will be computed/estimated against analysts/SME judgement. Cohen's d metric for comparing effects sizes: **Cohen's d = mean difference between two groups, divided by the pooled standard deviation.

TA3 technology will be evaluated using two analyst cohorts, recruited by TA5. One cohort will use today's baseline tools. The other will use the latest INCAS tools. Analysts will perform a timed task and then will be assessed on various sensemaking questions. Scores between cohorts will be compared.[14] Additionally they will complete a questionnaire on the utility and usability[15] of INCAS information and tools.

Each TA1-TA4 team is expected to deliver the following at least one month before each evaluation event and also the end of each program phase:

- source code and documentation, build scripts
- containerized executable code (in Phases 2-3)
- documentation to install, run, and operate the software (as applicable)

Each TA1-TA4 team is expected to deliver a Program Kickoff Brief, a Preliminary Design Review brief at six weeks after kickoff, a Critical Design Review brief at three months after kickoff, and a Final Report (MS Word) at 47 months (or the end of the contract, whichever comes first).

Each TA1-TA4 team is expected to deliver technical and financial status reports every month along with briefings for Quarterly Status Reviews and PI meetings.

Besides the technical capabilities and tasks discussed in Section I.D, TA1 and TA2 performers are expected to:

- Coordinate with TA3 on TA3-led campaign data model design and HMI design for feedback capture;
- Coordinate with TA4 on TA4-led API design; requirements for data sources and low-level analytics; and tool integration into the testbed infrastructure;
- Coordinate with TA5 on TA5-led scenario design, metrics, and experiment design;
- Participate in program evaluation events and support TA5 in evaluation execution and data analysis; and
- Support demonstrations to program SMEs and operational stakeholders.

Besides the technical capabilities and tasks discussed in Section I.D, the TA3 performer is expected to:

- Coordinate with TA1, TA2, and TA4 on TA3-led campaign data model design and HMI design for feedback format and capture;
- Coordinate with TA4 on TA4-led API design; requirements for data sources and low-level analytics; and tool integration into the testbed infrastructure;
- Coordinate with TA5 on TA5-led scenario design, metrics, and experiment design;
- Participate in program evaluation events and support TA5 in evaluation execution and data analysis;
- Work regularly with the Program SMEs group and operational stakeholders to collect and incorporate feedback on TA3 user interfaces and user experience (UI/UX); and
- Support demonstrations to program SMEs and operational stakeholders.

[14] e.g., via Cohen's d metric for comparing effects sizes: Cohen's d = mean difference between two groups, divided by the pooled standard deviation

[15] e.g., via System Usability Scale: https://www.usability.gov/how-to-and-tools/methods/system-usability-scale.html

Besides the technical capabilities and tasks discussed in Section I.D, the TA4 performer is expected to:

- Coordinate with TA1-TA3 on TA4-led API design; requirements for data sources and low-level analytics; and support tool integration into the testbed infrastructure;
- Coordinate with TA3 on TA3-led campaign data model design and HMI design for feedback capture;
- Coordinate with TA5 on TA5-led scenario design, metrics, and experiment design;
- Participate in program evaluation events and support TA5 in evaluation execution and data analysis;
- Support demonstrations to program SMEs and operational stakeholders; and
- Integrate operational stakeholder tools into program testbed and support capstone experiment (Phase 3) in potentially classified operational partner environments.

All performers should be aware of Human Subjects Research (HSR) requirements (see Section VI.B).

Government-furnished Property/Equipment/Information
Scenario-specific test and training data will be provided by TA5, a UARC or FFRDC. Initial data for the first scenario and data coding guidelines are expected by be available shortly after program kickoff.

Intellectual Property
The program will emphasize creating and leveraging open source technology and architecture. Intellectual property rights asserted by proposers are strongly encouraged to be aligned with open source regimes. See Section VI.B.1 for more details on intellectual property.

A key goal of the program is to establish an open, standards-based, multi-source, plug-and-play architecture that allows for interoperability and integration. This includes the ability to easily add, remove, substitute, and modify software and hardware components. This will facilitate rapid innovation by providing a base for future users or developers of program technologies and deliverables. Therefore, it is desired that all noncommercial software (including source code), software documentation, hardware designs and documentation, and technical data generated by the program be provided as deliverables to the Government, with a minimum of Government Purpose Rights (GPR[16]), as lesser rights may adversely impact the lifecycle costs of affected items, components, or processes.

II. Award Information

A. Awards

DARPA anticipates multiple awards for TA1 and TA2 and single awards for TA3 and TA4. The level of funding for individual awards made under this solicitation has not been predetermined

[16] GPR is defined in the Defense Federal Acquisition Regulation Supplement (DFARS) 252.227-7013, "Rights in Technical Data - Noncommercial Items," and DFARS 252.227-7014, "Rights in Noncommercial Computer Software and Noncommercial Computer Software Documentation."

and will depend on the quality of the proposals received and the availability of funds. Awards will be made to proposers whose proposals are determined to be the most advantageous to the Government, all factors considered, including the potential contributions of the proposed work, overall funding strategy, and availability of funding. See Section V for further information. The Government reserves the right to:

- select for negotiation all, some, one, or none of the proposals received in response to this solicitation;
- make awards without discussions with proposers;
- conduct discussions with proposers if it is later determined to be necessary;
- segregate portions of resulting awards into pre-priced options;
- accept proposals in their entirety or to select only portions of proposals for award;
- fund proposals in increments and/or with options for continued work at the end of one or more phases;
- request additional documentation once the award instrument has been determined (e.g., representations and certifications); and
- remove proposers from award consideration should the parties fail to reach agreement on award terms within a reasonable time or the proposer fails to provide requested additional information in a timely manner.

Proposals selected for award negotiation may result in a procurement contract or Other Transaction (OT) depending upon the nature of the work proposed, the required degree of interaction between parties, and other factors. Grants and Cooperative Agreements will NOT be awarded under this program.

Proposers looking for innovative, commercial-like contractual arrangements are encouraged to consider requesting Other Transactions. To understand the flexibility and options associated with Other Transactions, consult http://www.darpa.mil/work-with-us/contract-management#OtherTransactions.

In accordance with 10 U.S.C. § 2371b(f), the Government may award a follow-on production contract or Other Transaction (OT) for any OT awarded under this BAA if: (1) that participant in the OT, or a recognized successor in interest to the OT, successfully completed the entire prototype project provided for in the OT, as modified; and (2) the OT provides for the award of a follow-on production contract or OT to the participant, or a recognized successor in interest to the OT.

In all cases, the Government contracting officer shall have sole discretion to select award instrument type, regardless of instrument type proposed, and to negotiate all instrument terms and conditions with selectees. DARPA will apply publication or other restrictions, as necessary, if it determines that the research resulting from the proposed effort will present a high likelihood of disclosing performance characteristics of military systems or manufacturing technologies that are unique and critical to defense. Any award resulting from such a determination will include a requirement for DARPA permission before publishing any information or results on the program. For more information on publication restrictions, see the section below on Fundamental Research.

B. Fundamental Research

It is DoD policy that the publication of products of fundamental research will remain unrestricted to the maximum extent possible. National Security Decision Directive (NSDD) 189 defines fundamental research as follows:

> 'Fundamental research' means basic and applied research in science and engineering, the results of which ordinarily are published and shared broadly within the scientific community, as distinguished from proprietary research and from industrial development, design, production, and product utilization, the results of which ordinarily are restricted for proprietary or national security reasons.

As of the date of publication of this BAA, the Government expects that program goals as described herein may be met by proposed efforts for fundamental research and non-fundamental research. Some proposed research may present a high likelihood of disclosing performance characteristics of military systems or manufacturing technologies that are unique and critical to defense. Based on the anticipated type of proposer (e.g., university or industry) and the nature of the solicited work, the Government expects that some awards will include restrictions on the resultant research that will require the awardee to seek DARPA permission before publishing any information or results relative to the program.

Proposers should indicate in their proposal whether they believe the scope of the research included in their proposal is fundamental or not. While proposers should clearly explain the intended results of their research, the Government shall have sole discretion to determine whether the proposed research shall be considered fundamental and to select the award instrument type. Appropriate language will be included in resultant awards for non-fundamental research to prescribe publication requirements and other restrictions, as appropriate. This language can be found at http://www.darpa.mil/work-with-us/additional-baa.

For certain research projects, it may be possible that although the research to be performed by a potential awardee is non-fundamental research, its proposed subawardee's effort may be fundamental research. It is also possible that the research performed by a potential awardee is fundamental research while its proposed subawardee's effort may be non-fundamental research. In all cases, it is the potential awardee's responsibility to explain in its proposal which proposed efforts are fundamental research and why the proposed efforts should be considered fundamental research.

C. Disclosure of Information and Compliance with Safeguarding Covered Defense Information Controls

The following provisions and clause apply to all solicitations and contracts; however, the definition of "controlled technical information" clearly exempts work considered fundamental research and therefore, even though included in the contract, will not apply if the work is fundamental research.

DFARS 252.204-7000, "Disclosure of Information"
DFARS 252.204-7008, "Compliance with Safeguarding Covered Defense Information Controls"
DFARS 252.204-7012, "Safeguarding Covered Defense Information and Cyber Incident Reporting"

The full text of the above solicitation provision and contract clauses can be found at http://www.darpa.mil/work-with-us/additional-baa#NPRPAC.

Compliance with the above requirements includes the mandate for proposers to implement the security requirements specified by National Institute of Standards and Technology (NIST) Special Publication (SP) 800-171, "Protecting Controlled Unclassified Information in Nonfederal Information Systems and Organizations" (see https://doi.org/10.6028/NIST.SP.800-171r1) that are in effect at the time the BAA is issued.

For awards where the work is considered fundamental research, the contractor will not have to implement the aforementioned requirements and safeguards. However, should the nature of the work change during performance of the award, work not considered fundamental research will be subject to these requirements.

III. Eligibility Information

A. Eligible Applicants

DARPA welcomes engagement from all responsible sources capable of satisfying the Government's needs, including academia (colleges and universities); businesses (large, small, small disadvantaged, etc.); other organizations (including non-profit); other entities (foreign, domestic, and government); FFRDCs; minority institutions; and others.

DARPA welcomes engagement from non-traditional sources in addition to current DARPA performers.

1. Federally Funded Research and Development Centers (FFRDCs) and Government Entities

a. FFRDCs

FFRDCs are subject to applicable direct competition limitations and cannot propose to this BAA in any capacity unless they meet the following conditions. (1) FFRDCs must clearly demonstrate that the proposed work is not otherwise available from the private sector. (2) FFRDCs must provide a letter, on official letterhead from their sponsoring organization, that (a) cites the specific authority establishing their eligibility to propose to Government solicitations and compete with industry, and (b) certifies the FFRDC's compliance with the associated FFRDC sponsor agreement's terms and conditions. These conditions are a requirement for FFRDCs proposing to be awardees or subawardees.

b. Government Entities

Government Entities (e.g., Government/National laboratories, military educational institutions, etc.) are subject to applicable direct competition limitations. Government Entities must clearly demonstrate that the work is not otherwise available from the private sector and provide written documentation citing the specific statutory authority and contractual authority, if relevant, establishing their ability to propose to Government solicitations and compete with industry. This information is required for Government Entities proposing to be awardees or subawardees.

c. Authority and Eligibility

At the present time, DARPA does not consider 15 U.S.C. § 3710a to be sufficient legal authority to show eligibility. While 10 U.S.C.§ 2539b may be the appropriate statutory starting point for some entities, specific supporting regulatory guidance, together with evidence of agency approval, will still be required to fully establish eligibility. DARPA will consider FFRDC and Government Entity eligibility submissions on a case-by-case basis; however, the burden to prove eligibility for all team members rests solely with the proposer.

2. Foreign Participation

Non-U.S. organizations and/or individuals may participate to the extent that such participants comply with any necessary nondisclosure agreements, security regulations, export control laws, and other governing statutes applicable under the circumstances.

B. Organizational Conflicts of Interest

FAR 9.5 Requirements

In accordance with FAR 9.5, proposers are required to identify and disclose all facts relevant to potential OCIs involving the proposer's organization and *any* proposed team member (subawardee, consultant). Under this Section, the proposer is responsible for providing this disclosure with each proposal submitted to the BAA. The disclosure must include the proposer's, and as applicable, proposed team member's OCI mitigation plan. The OCI mitigation plan must include a description of the actions the proposer has taken, or intends to take, to prevent the existence of conflicting roles that might bias the proposer's judgment and to prevent the proposer from having unfair competitive advantage. The OCI mitigation plan will specifically discuss the disclosed OCI in the context of each of the OCI limitations outlined in FAR 9.505-1 through FAR 9.505-4.

Agency Supplemental OCI Policy

In addition, DARPA has a supplemental OCI policy that prohibits contractors/performers from concurrently providing Scientific Engineering Technical Assistance (SETA), Advisory and Assistance Services (A&AS) or similar support services and being a technical performer. Therefore, as part of the FAR 9.5 disclosure requirement above, a proposer must affirm whether the proposer or *any* proposed team member (subawardee, consultant) is providing SETA, A&AS, or similar support to any DARPA office(s) under: (a) a current award or subaward; or (b) a past award or subaward that ended within one calendar year prior to the proposal's submission date.

If SETA, A&AS, or similar support is being or was provided to any DARPA office(s), the proposal must include:

- The name of the DARPA office receiving the support;
- The prime contract number;
- Identification of proposed team member (subawardee, consultant) providing the support; and
- An OCI mitigation plan in accordance with FAR 9.5.

Government Procedures

In accordance with FAR 9.503, 9.504 and 9.506, the Government will evaluate OCI mitigation plans to avoid, neutralize or mitigate potential OCI issues before award and to determine whether it is in the Government's interest to grant a waiver. The Government will only evaluate OCI mitigation plans for proposals that are determined selectable under the BAA evaluation criteria and funding availability.

The Government may require proposers to provide additional information to assist the Government in evaluating the proposer's OCI mitigation plan.

If the Government determines that a proposer failed to fully disclose an OCI; or failed to provide the affirmation of DARPA support as described above; or failed to reasonably provide additional information requested by the Government to assist in evaluating the proposer's OCI mitigation plan, the Government may reject the proposal and withdraw it from consideration for award.

C. Cost Sharing/Matching

Cost sharing is not required; however, it will be carefully considered where there is an applicable statutory condition relating to the selected funding instrument (e.g., OTs under the authority of 10 U.S.C. § 2371). Proposers requesting an Other Transaction who meet the definition of "nontraditional defense contractor," as defined at 10 U.S.C. § 2302(9), should submit information similar to "data other than certified cost or pricing data," as defined at FAR 2.101, to the maximum extent possible to allow for the Government to evaluate cost realism. Proposers (to include subcontractors) who do not meet the definition of a nontraditional defense contractor (who are, therefore, considered a traditional defense contractor) shall submit "data other than certified cost or pricing data." It is incumbent on a proposer requesting an Other Transaction to provide an adequate amount of cost information needed in order for the Government to be able to evaluate cost realism. Failure to provide an adequate amount of cost information will result in the proposal being deemed non-conforming.

D. Other Eligibility Requirements

1. Ability to Receive Awards in Multiple Technical Areas - Conflicts of Interest

Proposers interested in multiple TAs must submit separate proposals for each TA. Each proposal may only address one TA.

There are no inherent conflicts of interest between any of the competitive TAs (TA1-TA4), and awards may be made to the same performer under multiple TAs. If a performer proposes to both TA4 and either TA1 or TA2, that performer must address in the proposal how TA4, as data provider and testbed developer, will ensure a "level playing field" to all other TA1 or TA2 performers.

In the event that multiple proposals are deemed selectable, the Government reserves the right to choose which to fund, in accordance with the conflict of interest rules described above.

2. Ability to Support Classified Development

At the time of proposal submission, all proposers wishing to submit proposals under TAs 3, 4, and 5 must have some personnel with a minimum clearance level of SECRET.

Proposers to TA1 and TA2 are not required to hold or obtain security clearances; however, TA1 and TA2 proposers who wish to have access to classified data and evaluation results for their applications must have personnel and access to facilities with a minimum classification level of SECRET at the time of award and must provide their CAGE code and security point(s) of contact in their proposals.

IV. Application and Submission Information

A. Address to Request Application Package

This document contains all information required to submit a response to this solicitation. No additional forms, kits, or other materials are needed except as referenced herein. No request for proposal (RFP) or additional solicitation regarding this opportunity will be issued, nor is additional information available except as provided at the System for Award Management, Contract Opportunities website (https://beta.sam.gov), or referenced herein.

B. Content and Form of Application Submission

1. Abstracts

Proposers are highly encouraged to submit an abstract in advance of a proposal to minimize effort and reduce the potential expense of preparing an out of scope proposal. The abstract provides a synopsis of the proposed project, including brief answers to the following questions:

- What is the proposed work attempting to accomplish or do?
- How is it done today, and what are the limitations?
- Who will care and what will the impact be if the work is successful?
- How much will it cost, and how long will it take?

DARPA will respond to abstracts with a statement as to whether DARPA is interested in the idea. If DARPA does not recommend the proposer submit a full proposal, DARPA will provide feedback to the proposer regarding the rationale for this decision. Regardless of DARPA's response to an abstract, proposers may submit a full proposal. DARPA will review all conforming full proposals using the published evaluation criteria and without regard to any comments resulting from the review of an abstract.

Abstract Format: Abstracts shall not exceed a maximum of 5 pages including the cover sheet and all figures, tables, and charts. The page limit does not include a submission letter (optional).

Reminder – Each abstract submitted in response to this BAA shall address only one TA. Organizations may submit multiple abstracts to any one TA, or they may submit abstracts to multiple TAs.

All pages shall be formatted for printing on 8-1/2 by 11 inch paper with 1-inch margins and font size not smaller than 12 point. Font sizes of 8 or 10 point may be used for figures,

tables, and charts. Document files must be in .pdf, .odx, .doc, .docx, .xls, or .xlsx formats. Submissions must be written in English. All pages should be numbered.

Abstracts must include the following components:

- **Cover Sheet**: Provide the administrative and technical points of contact (name, address, phone, email, lead organization). Include the BAA number, title of the proposed project, primary subcontractors, estimated cost, duration of the project, and the label "Abstract."

- **Goals and Impact:** Describe what is being proposed and what difference it will make (qualitatively and quantitatively) if successful. Describe the innovative aspects of the project in the context of existing capabilities and approaches, clearly delineating the relationship of this work to any other projects from the past and present.

- **Technical Plan:** Outline and address all technical challenges inherent in the approach and possible solutions for overcoming potential problems. Provide appropriate specific milestones (quantitative, if possible) at intermediate stages of the project to demonstrate progress.

- **Capabilities/Management Plan:** Provide a brief summary of expertise of the team, including subcontractors and key personnel. Identify a principal investigator for the project and include a description of the team's organization including roles and responsibilities. Describe the organizational experience in this area, existing intellectual property required to complete the project, and any specialized facilities to be used as part of the project. List Government-furnished property, facilities, or data assumed to be available.

- **Cost and Schedule:** Provide a cost estimate for resources over the proposed timeline of the project, broken down by year. Include labor, materials, a list of deliverables and delivery schedule. Provide cost estimates for each subcontractor (may be a rough order of magnitude).

2. Proposals

Proposals consist of Volume 1: Technical and Management Proposal (including mandatory Appendix A and optional Appendix B); Volume 2: Cost Proposal; the Level of Effort Summary by Task Excel spreadsheet; and the PowerPoint summary slide.

All pages shall be formatted for printing on 8-1/2 by 11-inch paper with 1-inch margins, single-line spacing, and a font size not smaller than 12 point. Font sizes of 8 or 10 point may be used for figures, tables, and charts. Document files must be in .pdf, .odx, .doc, .docx, .xls, or .xlsx formats. Submissions must be written in English. All pages of Volume 1 should be numbered.

A summary slide of the proposed effort, in PowerPoint format, should be submitted with the proposal. A template slide is provided as an attachment to the BAA. Submit this PowerPoint file and the Level of Effort Summary by Task Excel spreadsheet in addition to Volumes 1 and 2 of your full proposal. These documents do not count towards the total page count.

Reminder – Each proposal submitted in response to this BAA shall address only one TA. Organizations may submit multiple proposals to any one TA, or they may propose to multiple TAs.

Proposals not conforming to the format prescribed herein may not be reviewed.

a. Volume 1: Technical and Management Proposal

The maximum page count for Volume 1 is 30 pages, including all figures, tables and charts but not including the cover sheet, table of contents or appendices. A submission letter is optional and is not included in the page count. Appendix A is mandatory, but does not count against the page limit. Appendix B is optional and does not count against the page limit. Additional information not explicitly called for here shall only be included in the bibliography in Appendix B. Such materials will be considered for the reviewers' convenience only and not evaluated as part of the proposal.

Volume 1 must include the following components:

i. Cover Sheet: Include the following information.

- Label: "Proposal: Volume 1"
- BAA number (HR001121S0008)
- Technical Area
- Proposal title
- Lead organization (prime contractor) name
- Type of organization, selected from the following categories: Large Business, Small Disadvantaged Business, Other Small Business, HBCU, MI, Other Educational, or Other Nonprofit
- Technical point of contact (POC) including name, mailing address, telephone number, and email address
- Administrative POC including name, mailing address, telephone number, and email address
- Award instrument requested: procurement contract (specify cost/price structure) or OT.[17]
- Total amount of the proposed effort
- Place(s) and period(s) of performance
- Other team member (subcontractors and consultants) information (for each, include Technical POC name, organization, type of organization, mailing address, telephone number, and email address)
- Proposal validity period (minimum 120 days)
- Data Universal Numbering System (DUNS) number[18]

[17] Information on award instruments can be found at http://www.darpa.mil/work-with-us/contract-management.
[18] The DUNS number is used as the Government's contractor identification code for all procurement-related activities. Go to http://fedgov.dnb.com/webform/index.jsp to request a DUNS number (may take at least one business day). For further information regarding this subject, please see www.darpa.mil/work-with-us/additional-baa for further information.

- Taxpayer Identification Number (TIN)[19]
- Commercial and Government Entity (CAGE) code[20]
- Proposer's reference number (if any)

ii. Table of Contents

iii. Innovative Claims and Deliverables: Describe the innovative aspects of the project in the context of existing capabilities and approaches, clearly delineating the uniqueness and benefits of this project in the context of the state of the art, alternative approaches, and other projects from the past and present. Describe how the proposed project is revolutionary and how it significantly rises above the current state of the art.

Describe the deliverables associated with the proposed project and any plans to commercialize the technology, transition it to a customer, or further the work. Discuss the mitigation of any issues related to sustainment of the technology over its entire lifecycle, assuming the technology transition plan is successful.

iv. Technical Plan: Outline and address technical challenges inherent in the approach and possible solutions for overcoming potential problems. Demonstrate a deep understanding of the technical challenges and present a credible (even if risky) plan to achieve the project's goal. Discuss mitigation of technical risk. Provide appropriate measurable milestones (quantitative if possible) at intermediate stages of the project to demonstrate progress, and a plan for achieving the milestones.

v. Management Plan: Provide a summary of expertise of the proposed team, including any subcontractors/consultants and key personnel who will be executing the work. Identify a principal investigator (PI) for the project. Provide a clear description of the team's organization including an organization chart that illustrates, as applicable, the relationship of team members; unique capabilities of team members; task responsibilities of team members; teaming strategy among the team members; and key personnel with the amount of effort to be expended by each person during the project. Provide a detailed plan for coordination including explicit guidelines for interaction among collaborators/subcontractors of the proposed project. Include risk management approaches. Describe any formal teaming agreements that are required to execute this project. List Government-furnished materials or data assumed to be available.

vi. Personnel, Qualifications, and Commitments: List key personnel (no more than one page per person), showing a concise summary of their qualifications, discussion of previous accomplishments, and work in this or closely related research areas. Indicate the level of effort in terms of hours to be expended by each person during each contract year and other (current and proposed) major sources of support for them and/or commitments of their efforts. The proposer should include a table of key individual time commitments as follows:

Key Individual	Project	Status (Current, Pending, Proposed)	Hours on Project		
			Phase 1	Phase 2	Phase 3

Name 1	**Program name**	Proposed	x	x	x
	Project Name 1	Current	x	x	n/a
	Project Name 2	Pending	n/a	x	x
Name 2	**Program Name**	Proposed	x	x	x
	Project Name 3	Proposed	x	x	x

DARPA expects all key personnel associated with a proposal to make a substantial time commitment to the proposed activity and the proposal will be evaluated accordingly. It is DARPA's intention to put key personnel conditions into the awards, so proposers should not propose personnel that are not anticipated to execute the award. The proposer should note, official resumes are considered additional information and therefore count against the Volume 1 page count. If the proposers wishes to include official resumes, they should be included in Appendix B.

vii. Capabilities: Describe organizational experience in relevant subject area(s), existing intellectual property, or specialized facilities. Discuss any work in closely related research areas and previous accomplishments.

viii. Statement of Work (SOW): The SOW must provide a detailed task breakdown, citing specific tasks and their connection to the interim milestones and metrics, as applicable. Each phase of the project should be separately defined. The SOW must not include proprietary information. For each defined task/subtask, provide:

- A general description of the objective.
- A detailed description of the approach to be taken to accomplish each defined task/subtask.
- Identification of the primary organization responsible for task execution (prime contractor, subcontractor(s), consultant(s)), by name.
- A measurable milestone, (e.g., a deliverable, demonstration, or other event/activity that marks task completion).
- A definition of all deliverables (e.g., data, reports, software) to be provided to the Government in support of the proposed tasks/subtasks.
- Identify any tasks/subtasks (by the prime or subcontractor) that will be accomplished at a university and believed to be fundamental research.

ix. Schedule and Milestones: Provide a detailed schedule showing tasks (task name, duration, work breakdown structure element as applicable, performing organization), milestones, and the interrelationships among tasks. The task structure must be consistent with the SOW. Measurable milestones should be clearly articulated and defined in time relative to the start of the project.

[19] See https://www.irs.gov/forms-pubs/about-form-w-9 for information on requesting a TIN. Note, requests may take from 1 business day to 1 month depending on the method (online, fax, mail).
[20] A CAGE Code identifies companies doing or wishing to do business with the Federal Government. For further information regarding this subject, please see www.darpa.mil/work-with-us/additional-baa.

x. Appendix A: This section is mandatory and must include all of the following components. If a particular subsection is not applicable, state "NONE". There is no page limit on Appendix A.

(1). Team Member Identification: Provide a list of all key personnel including the prime, subcontractor(s), and consultant(s), as applicable. Identify specifically whether any are a non-US organization or individual, FFRDC and/or Government entity. Use the following format for this list:

Individual Name	Role (Prime, Subcontractor or Consultant)	Organization	Non-US?		FFRDC or Govt?
			Org	Ind.	

(2). Government or FFRDC Team Member Proof of Eligibility to Propose: If none of the team member organizations (prime or subcontractor) are a Government entity or FFRDC, state "NONE".

If any of the team member organizations are a Government entity or FFRDC, provide documentation (per Section III.A.1) citing the specific authority that establishes the applicable team member's eligibility to propose to Government solicitations to include: 1) statutory authority; 2) contractual authority; 3) supporting regulatory guidance; and 4) evidence of agency approval for applicable team member participation.

(3). Government or FFRDC Team Member Statement of Unique Capability: If none of the team member organizations (prime or subcontractor) are a Government entity or FFRDC, state "NONE".

If any of the team member organizations are a Government entity or FFRDC, provide a statement (per Section III.A.1) that demonstrates the work to be performed by the Government entity or FFRDC team member is not otherwise available from the private sector.

(4). Organizational Conflict of Interest Affirmations and Disclosure: If none of the proposed team members is currently providing SETA or similar support as described in Section III.B, state "NONE".

If any of the proposed team members (individual or organization) is currently performing SETA or similar support, furnish the following information:

Prime Contract Number	DARPA Technical Office supported	A description of the action the proposer has taken or proposes to take to avoid, neutralize, or mitigate the conflict

The proposer should note submission of the above table does not preclude the proposers' responsibility to submit an OCI mitigation plan in accordance with section III.B Organizational Conflicts of Interest.

(5). Intellectual Property (IP): If no IP restrictions are intended, state "NONE". The Government will assume unlimited rights to all IP not explicitly identified as having less than unlimited rights in the proposal.

For all noncommercial technical data or computer software that will be furnished to the Government with other than unlimited rights, provide (per Section VI.B.1) a list describing all proprietary claims to results, prototypes, deliverables or systems supporting and/or necessary for the use of the research, results, prototypes and/or deliverables. Provide documentation proving ownership or possession of appropriate licensing rights to all patented inventions (or inventions for which a patent application has been filed) to be used for the proposed project. Use the following format for these lists:

NONCOMMERCIAL				
Technical Data and/or Computer Software To be Furnished With Restrictions	**Summary of Intended Use in the Conduct of the Research**	**Basis for Assertion**	**Asserted Rights Category**	**Name of Person Asserting Restrictions**
(List)	(Narrative)	(List)	(List)	(List)
(List)	(Narrative)	(List)	(List)	(List)

COMMERCIAL				
Technical Data and/or Computer Software To be Furnished With Restrictions	**Summary of Intended Use in the Conduct of the Research**	**Basis for Assertion**	**Asserted Rights Category**	**Name of Person Asserting Restrictions**
(List)	(Narrative)	(List)	(List)	(List)
(List)	(Narrative)	(List)	(List)	(List)

(6). Human Subjects Research (HSR):

All institutions conducting DoD-supported research with human data or subjects under the INCAS program require HRPO approval before the DoD-supported work can begin in accordance with DoD Instruction 3216.02.
For further information on this subject, see Section VI.B.2.

(7). Animal Use: If animal use is not a factor in the proposal, state "NONE".

If the proposed research will involve animal use, provide a brief description of the plan for Institutional Animal Care and Use Committee (IACUC) review and approval. For further information on this subject, see Section VI.B.2.

(8). Representations Regarding Unpaid Delinquent Tax Liability or a Felony Conviction under Any Federal Law: For further information regarding this subject, please see www.darpa.mil/work-with-us/additional-baa.

Please also complete the following statements.

(1) The proposer is [ ] is not [ ] a corporation that has any unpaid Federal tax liability that has been assessed, for which all judicial and administrative remedies have been exhausted or have lapsed, and that is not being paid in a timely manner pursuant to an agreement with the authority responsible for collecting the tax liability,

(2) The proposer is [ ] is not [ ] a corporation that was convicted of a felony criminal violation under a Federal law within the preceding 24 months.

(9). Cost Accounting Standards (CAS) Notices and Certification: For any proposer who submits a proposal which, if accepted, will result in a CAS-compliant contract, must include a Disclosure Statement as required by 48 CFR 9903.202. The disclosure forms may be found at https://www.whitehouse.gov/wp-content/uploads/2017/11/CASB_DS-1.pdf.

If this section is not applicable, state "NONE". For further information regarding this subject, please see www.darpa.mil/work-with-us/additional-baa.

xi. Appendix B: If desired, include a brief bibliography to relevant papers, reports, or resumes. Do not include technical papers. This section is optional, and the materials will not be evaluated as part of the proposal review.

b. Volume 2 - Cost Proposal

This volume is mandatory and must include all the listed components. No page limit is specified for this volume.

The Government strongly encourages that proposers use the provided MS Excel™ DARPA Standard Cost Proposal Spreadsheet in the development of their cost proposals. A customized cost proposal spreadsheet may be an attachment to this solicitation. If not, the spreadsheet can be found on the DARPA website at http://www.darpa.mil/work-with-us/contract-management (under "Resources" on the right-hand side of the webpage). All tabs and tables in the cost proposal spreadsheet should be developed in an editable format with calculation formulas intact to allow traceability of the cost proposal. This cost proposal spreadsheet should be used by the prime organization and all subcontractors. In addition to using the cost proposal spreadsheet, the cost proposal still must include all other items required in this announcement that are not covered by the editable spreadsheet. Subcontractor cost proposal spreadsheets may be submitted directly to the Government by the proposed subcontractor via e-mail to the address in Part I of this solicitation. **Using the provided cost proposal spreadsheet will assist the Government in a rapid analysis of your proposed costs and, if your proposal is selected for a potential award, speed up the negotiation and award execution process**.

Pre-award costs will not be reimbursed unless a pre-award cost agreement is negotiated

prior to award.

i. Cover Sheet: Include the same information as the cover sheet for Volume 1, but with the label "Proposal: Volume 2."

ii. Cost Summary Tables: 1 page each, (by fiscal year and by phase). Provide a single-page summary table broken down by fiscal year listing cost totals for labor, materials, other direct charges (ODCs), indirect costs (overhead, fringe, general and administrative (G&A)), and any proposed fee for the project. Include costs for each task in each fiscal year of the project by prime and major subcontractors, total cost and proposed cost share, if applicable. Provide a second table containing the same information broken down by project phase.

iii. Cost Details: For each task, provide the following cost details by month. Include supporting documentation describing the method used to estimate costs. Identify any cost sharing.

(1) Direct Labor: Provide labor categories, rates and hours. Justify rates by providing examples of equivalent rates for equivalent talent, past commercial or Government rates from a Government audit agency such as the Defense Contract Audit Agency (DCAA), the Office of Naval Research (ONR), the Department of Health and Human Services (DHHS), etc.

(2) Indirect Costs: Identify all indirect cost rates (such as fringe benefits, labor overhead, material overhead, G&A, or F&A, etc.) and the basis for each.

(3) Materials: Provide an itemized list of all proposed materials, equipment, and supplies for each year including quantities, unit prices, proposed vendors (if known), and the basis of estimate (e.g., quotes, prior purchases, catalog price lists, etc.). For proposed equipment/information technology (as defined in FAR 2.101) purchases equal to or greater than $50,000, include a letter justifying the purchase. Include any requests for Government-furnished equipment or information with cost estimates (if applicable) and delivery dates.

(4) Travel: Provide a breakout of travel costs including the purpose and number of trips, origin and destination(s), duration, and travelers per trip.

(5) Subcontractor/Consultant Costs: Provide above information for each proposed subcontractor/consultant at the same level of detail as that required by the prime. Subcontractor cost proposals must include interdivisional work transfer agreements or similar arrangements. If the proposer has conducted a cost or price analysis to determine reasonableness, submit a copy of this along with the subcontractor proposal.

The proposer is responsible for the compilation and submission of all subcontractor/consultant cost proposals. At a minimum, the submitted cost volume must contain a copy of each subcontractor or consultant non-proprietary cost elements (i.e. rates, factors, etc.). Proprietary subcontractor/consultant cost

proposals may be included as part of Volume 2.

If proprietary subcontractor/consultant cost proposals are not included as part of Volume 2, they shall be emailed separately to INCAS@darpa.mil. Email messages must include "Subcontractor Cost Proposal" in the subject line and identify the principal investigator, prime proposer organization and proposal title in the body of the message. Any proprietary subcontractor or consultant proposal documentation which is not uploaded to the DARPA BAA Submission Website as part of the proposer's submission or provided by separate email shall be deemed noncompliant.

Please note that a Rough Order of Magnitude (ROM) or similar budgetary estimate does not constitute a fully qualified subcontract cost proposal and therefore submission of such will result in the entire proposal being deemed non-compliant.

(6) Other Direct Costs (ODCs): ODCs, to include material and equipment, should be itemized with costs. Proposer must provide supporting rationale justifying the relevancy of the items to the proposed project and explain how the proposed costs/budget was developed. More specifically, equipment costs must be justified with supporting documentation (i.e., vendor quote, past/recent purchase order, catalog price lists, etc.).

iv. Proposals Requesting a Procurement Contract: Provide the following information where applicable.

(1) Proposals exceeding the Certification of Cost or Pricing Threshold:
Provide "certified cost or pricing data" (as defined in FAR 2.101) or a request for exception in accordance with FAR 15.403. Please note:
(a) "Cost or Pricing Data" as defined in FAR 15.403-4 shall be required if the proposer is seeking a procurement contract per the referenced threshold, unless the proposer requests and is granted an exception from the requirement to submit cost or pricing data. Per DoD Class Deviation 2018-O0012, dated 13 April 2018, the threshold for obtaining certified cost and pricing data is $2,000,000. Per DFARS 215.408(5), DFARS 252.215-7009, Proposal Adequacy Checklist, applies to all proposers/proposals seeking a FAR-based award (contract).
(b) In accordance with DFARS 215.403-1(4)(D), DoD has waived cost or pricing data requirements for nonprofit organizations (including educational institutions) on cost-reimbursement-no-fee contracts. In such instances where the waiver stipulated at DFARs 215.403-1(4)(D) applies, proposers shall submit information other than cost or pricing data to the extent necessary for the Government to determine price reasonableness and cost realism; and cost or pricing data from subcontractors that are not nonprofit organizations when the subcontractor's proposal exceeds the cost and pricing data threshold at FAR 15.403-4(a)(1).
(c) Per Section 873 of the FY2016 National Defense Authorization Act (Pub L. 114-92), "Pilot Program For Streamlining Awards For Innovative Technology

Projects," small businesses and nontraditional defense contractors (as defined therein) are alleviated from submission of certified cost and pricing data for new contract awards valued at less than $7,500,000. In such instances where this "waiver" applies, proposers seeking a FAR-based contract shall submit information other than certified cost or pricing data to the extent necessary for the Government to determine price reasonableness and cost realism; and certified cost or pricing data from subcontractors that are not small businesses or nontraditional defense contractors when such subcontract proposals exceed the cost and pricing data threshold at FAR 15.403-4(a)(1).
(d) "Cost or pricing data" are not required if the proposer proposes an award instrument other than a procurement contract (i.e., cooperative agreement, grant, or other transaction).

(2) Proposals for $700,000 or more: Pursuant to Section 8(d) of the Small Business Act (15 U.S.C. § 637(d)), it is Government policy to enable small business and small disadvantaged business concerns to be considered fairly as subcontractors to organizations performing work as prime contractors or subcontractors under Government contracts, and to ensure that prime contractors and subcontractors carry out this policy. In accordance with FAR 19.702(a)(1) and 19.702(b), prepare a subcontractor plan, if applicable. The plan format is outlined in FAR 19.704.

(3) Proposers without an adequate cost accounting system: If requesting a cost-type contract, provide the DCAA Pre-award Accounting System Adequacy Checklist to facilitate DCAA's completion of an SF 1408. Proposers without an accounting system considered adequate for determining accurate costs must complete an SF 1408 if a cost type contract is to be negotiated. To facilitate this process, proposers should complete the SF 1408 found at http://www.gsa.gov/portal/forms/download/115778 and submit the completed form with the proposal. To complete the form, check the boxes on the second page, then provide a narrative explanation of your accounting system to supplement the checklist on page one.

v. Proposals Requesting an Other Transaction for Prototypes (OT) Agreement: Proposers must indicate whether they qualify as a nontraditional Defense contractor[21], have teamed with a nontraditional Defense contractor, or are providing a one-third cost share for this effort. Provide information to support the claims.

Provide a detailed list of milestones including: description, completion criteria, due date, and payment/funding schedule (to include, if cost share is proposed, contractor and Government share amounts). Milestones must relate directly to accomplishment of technical metrics as defined in the solicitation and/or the proposal. While agreement type (fixed price or expenditure based) will be subject to negotiation, the use of fixed price

[21] For definitions and information on OT agreements see http://www.darpa.mil/work-with-us/contract-management#OtherTransactions.

milestones with a payment/funding schedule is preferred. Proprietary information must not be included as part of the milestones.

c. Summary Slide

The submission of a PowerPoint slide summarizing the proposed effort is mandatory. A template PowerPoint slide will be provided on the Beta.Sam.gov (Beta.Sam.Gov) website, as an attachment. Submit the PowerPoint file (do not convert PowerPoint file to pdf format) in addition to Volume 1 and Volume 2 of your full proposal. This summary slide does not count towards the total page count.

3. Proprietary and Classified Information

DARPA policy is to treat all submissions as source selection information (see FAR 2.101 and 3.104) and to disclose the contents only for the purpose of evaluation. Restrictive notices notwithstanding, during the evaluation process, submissions may be handled by support contractors for administrative purposes and/or to assist with technical evaluation. All DARPA support contractors performing this role are expressly prohibited from performing DARPA-sponsored technical research and are bound by appropriate nondisclosure agreements.

a. Proprietary Information

Proposers are responsible for clearly identifying proprietary information. Submissions containing proprietary information must have the cover page and each page containing such information clearly marked.

C. Submission Dates and Times

Proposers are warned that submission deadlines as outlined herein are strictly enforced. Note: some proposal requirements may take from 1 business day to 1 month to complete. See the proposal checklist in Section VIII.D for further information.

When utilizing the DARPA BAA Submission Website, as described below in Section IV.D.1, a control number will be provided at the conclusion of the submission process. This control number should be used in all further correspondence regarding your abstract/proposal submission.

Failure to comply with the submission procedures outlined herein may result in the submission not being found non-compliant.

1. Abstracts

Abstracts must be submitted per the instructions outlined herein and received by DARPA no later than **November 17, 2020 at 12:00 noon (ET)**. Abstracts received after this date and time will not be reviewed.

2. Proposals

The proposal package -- full proposal (Volume 1 and 2) and, as applicable, proprietary subcontractor cost proposals, classified appendices to unclassified proposals -- must be submitted per the instructions outlined herein and received by DARPA no later than **January**

8, 2021 at 12:00 noon (ET). Proposal submissions received after this date and time will not be reviewed.

D. Funding Restrictions

Not applicable.

E. Other Submission Requirements

1. Unclassified Submission Instructions

Proposers must submit all parts of their submission package using the same method; submissions cannot be sent in part by one method and in part by another method nor should duplicate submissions be sent by multiple methods. Emailed submissions of abstracts or full proposals will not be accepted.

a. Abstracts

DARPA/I2O will employ an electronic upload submission system (https://baa.darpa.mil/) for all UNCLASSIFIED abstract responses under this solicitation.

First time users of the DARPA BAA Submission Website must complete a two-step account creation process at https://baa.darpa.mil/. The first step consists of registering for an Extranet account by going to the above URL and selecting the "Account Request" link on the right side of the page, using the Chrome browser. Upon completion of the online form, proposers will receive two separate emails; one will contain a user name and the second will provide a temporary password. Once both emails have been received, proposers must go back to the submission website and log in using that user name and password. After accessing the Extranet, proposers must create a user account for the DARPA BAA Submission Website by selecting the "Register Your Organization" link at the top of the page. The DARPA BAA Submission Website will display a list of solicitations open for submissions. Once a proposer's user account is created, they may view instructions on uploading their abstract.

Proposers who already have an account on the DARPA BAA Submission Website may simply log in at https://baa.darpa.mil/, select this solicitation from the list of open DARPA solicitations and proceed with their abstract submission. Note: Proposers who have created a DARPA BAA Submission Website account to submit to another DARPA Technical Office's solicitations do not need to create a new account to submit to this solicitation.

All submissions submitted electronically through DARPA's BAA website must be uploaded as zip files (.zip or .zipx extension). The final zip file should contain only the files requested herein and must not exceed 50 MB in size. Only one zip file will be accepted per submission. Note: Submissions not uploaded as zip files will be rejected by DARPA.

Please note that all submissions MUST be finalized, meaning that no further editing will be possible, when submitting through the DARPA BAA Submission Website in order for DARPA to be able to review your submission. If a submission is not finalized, the submission will not be accepted nor reviewed.

Website technical support may be reached at Action@darpa.mil and is typically available during regular business hours (9:00 AM – 5:00 PM ET, Monday-Friday). Questions regarding submission contents, format, deadlines, etc. should be emailed to INCAS@darpa.mil.

Since abstract submitters may encounter heavy traffic on the web server, they should not wait until the day abstracts are due to request an account and/or upload the submission.

Abstracts should not be submitted via Email or Grants.gov. Any abstracts submitted by Email or Grants.gov will not be accepted or reviewed.

b. Proposals Requesting a Procurement Contract or Other Transaction

DARPA/I2O will employ an electronic upload submission system (https://baa.darpa.mil/) for UNCLASSIFIED proposals requesting award of a procurement contract or Other Transaction under this solicitation.

First time users of the DARPA BAA Submission Website must complete a two-step account creation process at https://baa.darpa.mil/. The first step consists of registering for an Extranet account by going to the above URL and selecting the "Account Request" link on the right side of the page, using the Chrome browser. Upon completion of the online form, proposers will receive two separate emails; one will contain a user name and the second will provide a temporary password. Once both emails have been received, proposers must go back to the submission website and log in using that user name and password. After accessing the Extranet, proposers must create a user account for the DARPA BAA Submission Website by selecting the "Register Your Organization" link at the top of the page. The DARPA BAA Submission Website will display a list of solicitations open for submissions. Once a proposer's user account is created, they may view instructions on uploading their proposal.

Proposers who already have an account on the DARPA BAA Submission Website may simply log in at https://baa.darpa.mil/, select this solicitation from the list of open DARPA solicitations and proceed with their proposal submission. Note: Proposers who have created a DARPA BAA Submission Website account to submit to another DARPA Technical Office's solicitations do not need to create a new account to submit to this solicitation.

All submissions submitted electronically through DARPA's BAA website must be uploaded as zip files (.zip or .zipx extension). The final zip file should contain only the files requested herein and must not exceed 50 MB in size. Only one zip file will be accepted per submission. Note: Submissions not uploaded as zip files will be rejected by DARPA.

Please note that all submissions MUST be finalized, meaning that no further editing will be possible, when submitting through the DARPA BAA Submission Website in order for DARPA to be able to review your submission. If a submission is not finalized, the submission will not be deemed acceptable and will not be reviewed.

Website technical support may be reached at Action@darpa.mil and is typically available

during regular business hours (9:00 AM – 5:00 PM ET, Monday-Friday). Questions regarding submission contents, format, deadlines, etc. should be emailed to INCAS@darpa.mil.

Since proposers may encounter heavy traffic on the web server, it is highly recommended that proposers not wait until the day proposals are due to request an account and/or upload the submission. Full proposals should not be submitted via Email. Any full proposals submitted by Email will not be accepted or evaluated.

c. Proposals Requesting a Technology Investment Agreement (TIA)

Proposers requesting Technology Investment Agreements (TIA) awarded under 10 U.S.C. 2371 must include the completed form indicated below. This requirement only applies only to those who expect to receive a TIA as their ultimate award instrument.

The National Defense Authorization Act (NDAA) for FY 2019, Section 1286, directs the Secretary of Defense to protect intellectual property, controlled information, key personnel, and information about critical technologies relevant to national security and limit undue influence, including foreign talent programs by countries that desire to exploit United States' technology within the DoD research, science and technology, and innovation enterprise. This requirement is necessary for all research and research-related educational activities. The DoD is using the form below to collect the necessary information to satisfy these requirements.

The Research and Related Senior/Key Person Profile (Expanded) form, available on the Grants.gov website at https://apply07.grants.gov/apply/forms/sample/RR_KeyPersonExpanded_2_0-V2.0.pdf, will be used to collect the following information for all senior/key personnel, including Project Director/Principal Investigator and Co-Project Director/Co-Principal Investigator, whether or not the individuals' efforts under the project are funded by the DoD:

- Degree Type and Degree Year.
- Current and Pending Support, including:
    - A list of all current projects the individual is working on, in addition to any future support the individual has applied to receive, regardless of the source.
    - Title and objectives of the other research projects.
    - The percentage per year to be devoted to the other projects.
    - The total amount of support the individual is receiving in connection to each of the other research projects or will receive if other proposals are awarded.
    - Name and address of the agencies and/or other parties supporting the other research projects
    - Period of performance for the other research projects.

Additional senior/key persons can be added by selecting the "Next Person" button at the bottom of the form. Note that, although applications without this information completed may pass Grants.gov edit checks, if DARPA receives an application without the required information, DARPA may determine that the application is incomplete and may cause your submission to be rejected and eliminated from further review and consideration under the BAA. DARPA reserves the right to request further details from the applicant before making a final determination on funding the effort.

Grants.gov requires proposers to complete a one-time registration process before a proposal can be electronically submitted. If proposers have not previously registered, this process can take between three business days and four weeks if all steps are not completed in a timely manner. See the Grants.gov user guides and checklists at https://www.grants.gov/web/grants/applicants.html for further information.

Once Grants.gov has received an uploaded proposal submission, Grants.gov will send two email messages to notify proposers that: (1) their submission has been received by Grants.gov; and (2) the submission has been either validated or rejected by the system. It may take up to two business days to receive these emails. If the proposal is rejected by Grants.gov, it must be corrected and re-submitted before DARPA can retrieve it (assuming the solicitation has not expired). If the proposal is validated, then the proposer has successfully submitted their proposal and Grants.gov will notify DARPA. Once the proposal is retrieved by DARPA, Grants.gov will send a third email to notify the proposer. If requested by the proposer, a DARPA control number for the Technology Investment Agreement submission can be provided following the due date and time for the proposals. This control number should be used in all further correspondence regarding this submission.

To avoid missing deadlines, proposers should submit their proposals to Grants.gov in advance of the proposal due date, with sufficient time to complete the registration and submission processes, receive email notifications and correct errors, as applicable.

For more information on submitting proposals to Grants.gov, visit the Grants.gov submissions page at: http://www.grants.gov/web/grants/applicants/apply-for-grants.html.

Proposers electing to submit Technology Investment Agreements as hard copies must complete the SF 424 R&R form (Application for Federal Assistance, Research and Related) available on the Grants.gov website http://apply07.grants.gov/apply/forms/sample/RR_SF424_2_0-V2.0.pdf.

Proposers choosing to mail hard copy proposals to DARPA must include one paper copy and one electronic copy (e.g., CD/DVD) of the full proposal package.

Technical support for the Grants.gov website may be reached at 1-800-518-4726 and support@grants.gov. Questions regarding submission contents, format, deadlines, etc. should be emailed to INCAS@darpa.mil.

V. Application Review Information

A. Evaluation Criteria

Proposals will be evaluated using the following criteria listed in descending order of importance: Overall Scientific and Technical Merit; Potential Contribution and Relevance to the DARPA Mission; and Cost Realism.

- *Overall Scientific and Technical Merit*:
  The proposed technical approach is innovative, feasible, achievable, and complete.

The task descriptions and associated technical elements are complete and in a logical sequence, with all proposed deliverables clearly defined such that a viable attempt to achieve project goals is likely as a result of award. The proposal identifies major technical risks and clearly defines feasible mitigation efforts.

Proposer should also take note to the information provided in Section I, as DARPA will also look at how a proposer addresses the technical challenges relevant to each TA, as well as view how key personnel will work on those challenges.

- *Potential Contribution and Relevance to the DARPA Mission:*
  The potential contributions of the proposed effort are relevant to the national technology base. Specifically, DARPA's mission is to make pivotal early technology investments that create or prevent strategic surprise for U.S. National Security.

  This includes considering the extent to which any proposed intellectual property restrictions will potentially impact the Government's ability to transition the technology.

- *Cost Realism:*

  The proposed costs are realistic for the technical and management approach and accurately reflect the technical goals and objectives of the solicitation. The proposed costs are consistent with the proposer's Statement of Work and reflect a sufficient understanding of the costs and level of effort needed to successfully accomplish the proposed technical approach. The costs for the prime proposer and proposed subawardees are substantiated by the details provided in the proposal (e.g., the type and number of labor hours proposed per task, the types and quantities of materials, equipment and fabrication costs, travel and any other applicable costs and the basis for the estimates).

B. Review and Selection Process

The review process identifies proposals that meet the evaluation criteria described above and are, therefore, selectable for negotiation of awards by the Government. DARPA policy is to ensure impartial, equitable, comprehensive proposal evaluations and to select proposals that meet DARPA technical, policy, and programmatic goals. If necessary, panels of experts in the appropriate areas will be convened. As described in Section IV, proposals must be deemed conforming to the solicitation to receive a full technical review against the evaluation criteria; proposals deemed compliant will be removed from consideration.

DARPA will conduct a scientific/technical review of each conforming proposal. Conforming proposals comply with all requirements detailed in this BAA; proposals that fail to do so may be deemed non-conforming and may be removed from consideration. Proposals will not be evaluated against each other since they are not submitted in accordance with a common work statement. DARPA's intent is to review proposals as soon as possible after they arrive; however, proposals may be reviewed periodically for administrative reasons.

Selections may be made at any time during the period of solicitation. Pursuant to FAR 35.016, the primary basis for selecting proposals for award negotiation shall be technical, importance to agency programs, and funding availability. Conforming proposals based on a previously submitted abstract will be reviewed without regard to feedback resulting from review of that abstract. Furthermore, a favorable response to an abstract is not a guarantee that a proposal based

on the abstract will ultimately be selected for award negotiation. Proposals that are determined selectable will not necessarily receive awards.

For evaluation purposes, a proposal is defined to be the document and supporting materials as described in Section IV.B. Subject to the restrictions set forth in FAR 37.203(d), input on technical aspects of the proposals may be solicited by DARPA from non-Government consultants/experts who are strictly bound by the appropriate non-disclosure requirements. No submissions (abstract or proposal) will be returned.

VI. Award Administration Information

A. Selection Notices

After proposal evaluations are complete, proposers will be notified as to whether their proposal was selected for award negotiation as a result of the review process. Notification will be sent by email to the technical and administrative POCs identified on the proposal cover sheet. If a proposal has been selected for award negotiation, the Government will initiate those negotiations following the notification.

B. Administrative and National Policy Requirements

1. Intellectual Property

Proposers should note that the Government does not own the intellectual property of technical data/computer software developed under Government contracts; it acquires the right to use the technical data/computer software. Regardless of the scope of the Government's rights, performers may freely use their same data/software for their own commercial purposes (unless restricted by U.S. export control laws or security classification). Therefore, technical data and computer software developed under this solicitation will remain the property of the performers, though DARPA desires to have a minimum of Government Purpose Rights (GPR) to noncommercial technical data/computer software developed through DARPA sponsorship.

The program will emphasize creating and leveraging open source technology and architecture. Intellectual property rights asserted by proposers are strongly encouraged to be aligned with open source/open architecture regimes.

Proposers expecting to use, but not to deliver, commercial open source tools or other materials in implementing their approach may be required to indemnify the Government against legal liability arising from such use.

All references to "Unlimited Rights" or "Government Purpose Rights" are intended to refer to the definitions of those terms as set forth in the Defense Federal Acquisition Regulation Supplement (DFARS) Part 227.

a. Intellectual Property Representations

All proposers must provide a good faith representation of either ownership or possession of appropriate licensing rights to all other IP to be used for the proposed project. Proposers must provide a short summary for each item asserted with less than unlimited rights that

describes the nature of the restriction and the intended use of the IP in the conduct of the proposed research. If proposers desire to use proprietary software or technical data or both as the basis of their proposed approach, in whole or in part, they should: (1) clearly identify in Appendix A such software/data and its proposed particular use(s); (2) explain how the Government will be able to reach its program goals (including transition) within the proprietary model offered; and (3) provide possible nonproprietary alternatives in any area that might present transition difficulties or increased risk or cost to the Government under the proposed proprietary solution.

b. Patents

All proposers must include documentation proving ownership or possession of appropriate licensing rights to all patented inventions to be used for the proposed project. If a patent application has been filed for an invention, but it includes proprietary information and is not publicly available, a proposer must provide documentation that includes: the patent number, inventor name(s), assignee names (if any), filing date, filing date of any related provisional application, and summary of the patent title, with either: (1) a representation of invention ownership, or (2) proof of possession of appropriate licensing rights in the invention (i.e., an agreement from the owner of the patent granting license to the proposer).

c. Procurement Contracts

- **Noncommercial Items (Technical Data and Computer Software):** Proposers requesting a procurement contract must list all noncommercial technical data and computer software that it plans to generate, develop, and/or deliver, in which the Government will acquire less than unlimited rights and to assert specific restrictions on those deliverables. In the event a proposer does not submit the list, the Government will assume that it has unlimited rights to all noncommercial technical data and computer software generated, developed, and/or delivered, unless it is substantiated that development of the noncommercial technical data and computer software occurred with mixed funding. If mixed funding is anticipated in the development of noncommercial technical data and computer software generated, developed, and/or delivered, proposers should identify the data and software in question as subject to GPR. In accordance with DFARS 252.227-7013, "Rights in Technical Data - Noncommercial Items," and DFARS 252.227-7014, "Rights in Noncommercial Computer Software and Noncommercial Computer Software Documentation," the Government will automatically assume that any such GPR restriction is limited to a period of 5 years, at which time the Government will acquire unlimited rights unless the parties agree otherwise. The Government may use the list during the evaluation process to evaluate the impact of any identified restrictions and may request additional information from the proposer, as may be necessary, to evaluate the proposer's assertions. Failure to provide full information may result in a determination that the proposal is not compliant with the solicitation. A template for complying with this request is provided in Section IV.B.2.a.xi.(5).

- **Commercial Items (Technical Data and Computer Software):** Proposers requesting a procurement contract must list all commercial technical data and commercial computer software that may be included in any deliverables

contemplated under the research project, and assert any applicable restrictions on the Government's use of such commercial technical data and/or computer software. In the event a proposer does not submit the list, the Government will assume there are no restrictions on the Government's use of such commercial items. The Government may use the list during the evaluation process to evaluate the impact of any identified restrictions and may request additional information from the proposer to evaluate the proposer's assertions. Failure to provide full information may result in a determination that the proposal is not compliant with the solicitation. A template for complying with this request is provided in Section IV.B.2.a.xi.(5).

d. Other Types of Awards

Proposers responding to this solicitation requesting an award instrument other than a procurement contract shall follow the applicable rules and regulations governing those award instruments, but in all cases should appropriately identify any potential restrictions on the Government's use of any intellectual property contemplated under those award instruments in question. This includes both noncommercial items and commercial items. The Government may use the list as part of the evaluation process to assess the impact of any identified restrictions, and may request additional information from the proposer, to evaluate the proposer's assertions. Failure to provide full information may result in a determination that the proposal is not compliant with the solicitation. A template for complying with this request is provided in Section IV.B.2.a.xi.(5).

2. Human Subjects Research (HSR)/Animal Use

Proposers that anticipate involving human subjects or animals in the proposed research must comply with the approval procedures detailed at http://www.darpa.mil/work-with-us/additional-baa, to include providing the information specified therein as required for proposal submission.

Proposers planning human subjects research should include a summary HSR paragraph describing the proposed research, including the following key information: the planned research subjects; the performer organization (prime or subcontractor); whether an existing protocol or a new protocol will be used; the title and the Federal Wide Assurance (FWA) Information number for an existing protocol; and whether an existing protocol will be modified.

All institutions conducting DoD-supported research with human data or subjects under the INCAS program require HRPO approval before the DoD-supported work can begin in accordance with DoD Instruction 3216.02.

To facilitate regulatory review and approval by the HRPO, the HRPO recommends that each INCAS performer conducting research with human data submit a single protocol application to their local regulatory or Institutional Review Board (IRB) office that describes their institution's research plan. The protocol application should identify and describe the DARPA INCAS aims, identify each data set that will be analyzed by the performer, identify the source of the data, and clearly state whether the performer has access to identifiable human data. The application should also describe whether the research is "about" the humans whose data are

being sought (e.g. how humans respond to newsworthy events) or whether the human data is incidental to the data of interest (e.g. a news event or geographic location). This will be the protocol application that HRPO reviews and approves.

If the performer has an existing blanket IRB approval that includes multiple research activities, HRPO advises the performer to create a new application following this guidance, since the HRPO will not split portions of an ongoing protocol for review.

After institutional regulatory/IRB office review is complete and determination letter is issued, HRPO will review the complete application and "concur" with the institution's determination, whether the institution determined the research activities to be 'research not involving human subjects' or 'exempt' human subjects research. In most cases, given what this program entails, Institutional Review Board (IRB) approval and oversight is unlikely to be required. However, each proposer to this BAA should assume that their research will include HSR and plan accordingly. Proposals that clearly describe the proposer's anticipated IRB procedures will be considered stronger than proposals that lack this information.

NOTE: Proposers to this BAA do not need to submit an IRB protocol to be considered for selection. However, once selected, proposers should be prepared to begin the IRB/HRPO process.

Once selected, performers will be required to submit the following to the HRPO:

- Local IRB or human protections protocol application.
- Local regulatory determination memo (e.g. "exempt" or "research not involving human subjects") or IRB approval memo.
- Appropriate HRPO submission form (there is a unique form for secondary use of data, and another form for prospective human subjects research).
- For any secondary use of data that originated with a prior research study, the HRPO must also receive the original consent form to confirm that they do not prohibit sharing data for secondary uses.
- If the performer's INCAS activities require IRB oversight, there are additional HRPO requirements that are described on the appropriate submission form.

3. Data and Privacy Protection

It is neither the mission, nor the intent, of INCAS to solicit, collect, or process sensitive personally identifiable information (PII) from/of members of the public, nor to put the privacy of individuals that have standing under the Privacy Act of 1974 (the Act) at risk. Notwithstanding, during the course of program execution, it is foreseeable that the PII of persons with standing under the Act may be incidentally encountered.

Such incidental encounter represents a potential privacy risk (which based on mission intent is likely very low, but not zero). This privacy risk will be mitigated through establishment of Office of Management and Budget and DoD prescribed privacy-safeguarding protocols that will run with the program including:

- Physical protocols (e.g., secure badge controlled physical accesses);

- Administrative protocols (e.g., need-to-know, role-based-access controls for logical accesses); and,
- Technical protocols (e.g., appropriate file permissions, end-to-end encryption, encryption-at-rest, and access behind firewalls of program data).

Notwithstanding program mission, intent, and safeguarding protocols, incidental encounter of PII carries the foreseeable risk of abuse, breach, or loss of control. To mitigate this risk, and in addition to the foregoing privacy safeguarding protocols, if, and when, INCAS incidentally encounters PII, it will be reported to the Program Manager, will not be processed, and immediately deleted. To understand what qualifies as at-risk PII, INCAS performers and staff will complete privacy training to understand the DARPA's Fair Information Practice Principles (FIPPs). As recommended by the Act and other applicable guidance, DARPA's FIPPs are tailored for its specific research mission.

Program execution will rely on publicly available information (PAI). The foreseeable risk is the appearance that use of PAI by INCAS is a pretext to accessing inextricably linked PII irresponsibly or with impunity. As stated, this risk is mitigated because incidentally encountered PII will be deleted.

Testing and evaluation scenarios will rely on real-world data, but the INCAS program will only process information and metadata of non-US persons in the aggregate. Consequently, and notwithstanding the focus of INCAS on non-US persons, due to the open and connected nature of online communication, it is likely that some U.S. person information (USPI) may be incidentally encountered. As with PII and PAI above, USPI will be deleted when identified.

In addition to receiving privacy training, INCAS performers will also sign data sharing agreements. Data controls will be facilitated through the TA4 performer's central role in data provisioning. For TA2, data will be analyzed in aggregate for subpopulations rather than at the individual level.

4. Electronic and Information Technology

All electronic and information technology acquired through this solicitation must satisfy the accessibility requirements of Section 508 of the Rehabilitation Act (29 U.S.C. § 794d) and FAR 39.2. Each project involving the creation or inclusion of electronic and information technology must ensure that: (1) Federal employees with disabilities will have access to and use of information that is comparable to the access and use by Federal employees who are not individuals with disabilities; and (2) members of the public with disabilities seeking information or services from DARPA will have access to and use of information and data that is comparable to the access and use of information and data by members of the public who are not individuals with disabilities.

5. System for Award Management (SAM) and Universal Identifier Requirements

All proposers must be registered in SAM unless exempt per FAR 4.1102. FAR 52.204-7, "System for Award Management" and FAR 52.204-13, "System for Award Management Maintenance" are incorporated into this BAA. See http://www.darpa.mil/work-with-us/additional-baa for further information.

International entities can register in SAM by following the instructions in this link: https://www.fsd.gov/fsd-gov/answer.do?sysparm_kbid=dbf8053adb119344d71272131f961946&sysparm_search=KB0013221.

Note that new registrations can take an average of 7-10 business days to process in SAM. SAM registration requires the following information:

- DUNS number
- TIN
- CAGE Code. If a proposer does not already have a CAGE code, one will be assigned during SAM registration.
- Electronic Funds Transfer information (e.g., proposer's bank account number, routing number, and bank phone or fax number).

C. Reporting

1. Technical and Financial Reports

The number and types of technical and financial reports required under the contracted project will be specified in the award document, and will include, at a minimum, monthly financial status reports and a quarterly status summary. A final report that summarizes the project and tasks will be required at the conclusion of the performance period for the award. The reports shall be prepared and submitted in accordance with the procedures contained in the award document.

2. Representations and Certifications

In accordance with FAR 4.1102 and 4.1201, proposers requesting a procurement contract must complete electronic annual representations and certifications at https://www.sam.gov/.

In addition, all proposers are required to submit for all award instrument types (i.e., procurement contract, cooperative agreement, grant, and Other Transaction for Prototype) supplementary DARPA-specific representations and certifications at the time of proposal submission. See http://www.darpa.mil/work-with-us/reps-certs for further information on required representation and certification depending on your requested award instrument.

3. Wide Area Work Flow (WAWF)

Unless using another means of invoicing, performers will be required to submit invoices for payment directly at https://piee.eb.mil/piee-landing/. If applicable, WAWF registration is required prior to any award under this solicitation.

4. FAR and DFARS Clauses

Solicitation clauses in the FAR and DFARS relevant to procurement contracts and FAR and DFARS clauses that may be included in any resultant procurement contracts are incorporated herein and can be found at www.darpa.mil/work-with-us/additional-baa.

See also Section II.C regarding the disclosure of information and compliance with safeguarding covered defense information controls (for FAR-based procurement contracts

only).

5. i-Edison

Award documents will contain a requirement for patent reports and notifications to be submitted electronically through the i-Edison Federal patent reporting system at http://s-edison.info.nih.gov/iEdison.

6. Controlled Unclassified Information (CUI) on Non-DoD Information Systems

Further information on Controlled Unclassified Information on Non-DoD Information Systems is incorporated herein can be found at www.darpa.mil/work-with-us/additional-baa.

VII. Agency Contacts

DARPA will use email for all technical and administrative correspondence regarding this solicitation.

- **Technical POC:** Dr. Brian Kettler, Program Manager, DARPA/I2O
- **Email:** INCAS@darpa.mil
- **Mailing address**:
  DARPA/I2O
  ATTN: HR001121S0008
  675 North Randolph Street
  Arlington, VA 22203-2114
- **I2O Solicitation Website:** https://www.darpa.mil/work-with-us/opportunities

VIII. Other Information

A. Frequently Asked Questions (FAQs)

Administrative, technical, and contractual questions should be sent via email to INCAS@darpa.mil. All questions must be in English and must include the name, email address, and the telephone number of a point of contact.

DARPA will attempt to answer questions in a timely manner; however, questions submitted within 7 days of closing may not be answered. If applicable, DARPA will post FAQs to https://www.darpa.mil/work-with-us/opportunities.

B. Proposers Day

The INCAS Proposers Day will be held on October 30, 2020, Year, in Arlington, VA. The special notice regarding the INCAS Proposers Day, DARPA-SN-21-01, can be found at https://beta.sam.gov/search?keywords=incas&sort=-relevance&index=&is_active=true&page=1.

For further information regarding the INCAS Proposers Day, including slides from the event,

please see https://www.darpa.mil/work-with-us/opportunities under HR001121S0008.

C. Submission Checklist

The following items apply prior to proposal submission. Note: some items may take up to 1 month to complete.

✓	Item	BAA Section	Applicability	Comment
	Abstract	IV.B.1	Optional, but recommended	Conform to stated page limit.
	Obtain DUNS number	IV.B.2.a.i	Required of all proposers	The DUNS Number is the Federal Government's contractor identification code for all procurement-related activities. See http://fedgov.dnb.com/webform/index.jsp to request a DUNS number. Note: requests may take at least one business day.
	Obtain Taxpayer Identification Number (TIN)	IV.B.2.a.i	Required of all proposers	A TIN is used by the Internal Revenue Service in the administration of tax laws. See https://www.irs.gov/forms-pubs/about-form-w-9 for information on requesting a TIN. Note: requests may take from 1 business day to 1 month depending on the method (online, fax, mail).
	Register in the System for Award Management (SAM)	VI.B.5	Required of all proposers	The SAM combines Federal procurement systems and the Catalog of Federal Domestic Assistance into one system. See https://sam.gov/SAM/pages/public/loginFAQ.jsf for information and registration. Note: new registrations can take an average of 7-10 business days. SAM registration requires the following information: -DUNS number -TIN -CAGE Code. A CAGE Code identifies companies doing or wishing to do business with the Federal Government. If a proposer does not already have a CAGE code, one will be assigned during SAM registration. -Electronic Funds Transfer information (e.g., proposer's bank account number, routing number, and bank phone or fax number).
	Ensure eligibility of all team members	III	Required of all proposers	Verify eligibility, as applicable, for in accordance with requirements outlined in Section 3.

The following items apply as part of the submission package:

✓	Item	BAA Section	Applicability	Comment
	Volume 1 (Technical and Management Proposal)	IV.B.2	Required of all proposers	Conform to stated page limits and formatting requirements. Include all requested information.
	Appendix A	IV.B.2.a.x	Required of all proposers	-Team member identification - Government/FFRDC team member proof of eligibility - Organizational conflict of interest affirmations - Intellectual property assertions - Human subjects research - Animal use - Unpaid delinquent tax liability/felony conviction representations

				-CASB disclosure, if applicable
	Appendix B	IV.B.2.a.xi	Optional of all proposers	- Appendix B does not count against the page limit - A brief bibliography to relevant papers, reports, or resumes - Do not include technical papers - The materials in Appendix B will not be evaluated as part of the proposal review
	Volume 2 (Cost Proposal)	IV.B.2.b	Required of all proposers	- Cover Sheet - Cost summary - Detailed cost information including justifications for direct labor, indirect costs/rates, materials/equipment, subcontractors/consultants, travel, ODCs - Cost spreadsheet file (.xls or equivalent format) - If applicable, list of milestones for 845 OTs - Subcontractor plan, if applicable Subcontractor cost proposals - Itemized list of material and equipment items to be purchased with vendor quotes or engineering estimates for material and equipment more than $50,000 - Travel purpose, departure/arrival destinations, and sample airfare
	PowerPoint Summary Slide	IV.B.2.c	Required of all proposers	A template PowerPoint slide will be provided on the Beta.Sam.Gov website as an attachment. Submit the PowerPoint file (do not convert PowerPoint file to pdf format).

D. Associate Contractor Agreement (ACA)

This same or similar language will be included in contract awards against HR001121S0008. Awards other than FAR based contracts will contain similar agreement language:

(a) It is recognized that success of the INCAS research effort depends in part upon the open exchange of information between the various Associate Contractors involved in the effort. This language is intended to insure that there will be appropriate coordination and integration of work by the Associate Contractors to achieve complete compatibility and to prevent unnecessary duplication of effort. By executing this contract, the Contractor assumes the responsibilities of an Associate Contractor. For the purpose of this ACA, the term Contractor includes subsidiaries, affiliates, and organizations under the control of the contractor (e.g. subcontractors).

(b) Work under this contract may involve access to proprietary or confidential data from an Associate Contractor. To the extent that such data is received by the Contractor from any Associate Contractor for the performance of this contract, the Contractor hereby agrees that any proprietary information received shall remain the property of the Associate Contractor and shall be used solely for the purpose of the INCAS research effort. Only that information which is received from another contractor in writing and which is clearly identified as proprietary or confidential shall be protected in accordance with this provision. The obligation to retain such information in confidence will be satisfied if the Contractor receiving such information utilizes the same controls as it employs to avoid disclosure, publication, or dissemination of its own proprietary information. The receiving Contractor agrees to hold such information in confidence as provided herein so long as such information is of a proprietary/confidential or limited rights nature.

(c) The Contractor hereby agrees to closely cooperate as an Associate Contractor with the other Associate Contractors on this research effort. This involves as a minimum:

(1) maintenance of a close liaison and working relationship;

(2) maintenance of a free and open information network with all Government-identified associate Contractors;

(3) delineation of detailed interface responsibilities;

(4) entering into a written agreement with the other Associate Contractors setting forth the substance and procedures relating to the foregoing, and promptly providing the Agreements Officer/Procuring Contracting Officer with a copy of same; and,

(5) receipt of proprietary information from the Associate Contractor and transmittal of Contractor proprietary information to the Associate Contractors subject to any applicable proprietary information exchange agreements between associate contractors when, in either case, those actions are necessary for the performance of either.

(d) In the event that the Contractor and the Associate Contractor are unable to agree upon any such interface matter of substance, or if the technical data identified is not provided as scheduled, the Contractor shall promptly notify the DARPA INCAS Program Manager. The Government will determine the appropriate corrective action and will issue guidance to the affected Contractor.

(e) The Contractor agrees to insert in all subcontracts hereunder which require access to proprietary information belonging to the Associate Contractor, a provision which shall conform substantially to the language of this ACA, including this paragraph (e).

(f) Associate Contractors for the INCAS research effort include:

Contractor	Technical Area

For information concerning agency level protests see http://www.darpa.mil/work-with-us/additional-baa#NPRPAC.